American Cinematographer

FOR AMATEUR AND PROFESSIONAL MOTION PICTURE

October, 1940

25c

Foreign $5

Published in Hollywood by American Society of Cinematographers

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HERE is the newest Bell & Howell development for professional use . . . the Optical Reduction Printer or Step Printer, for 35 to 16 mm. Outstanding among other new features is the fact that it insures perfect registration at both the 35 and 16 mm. ends. The entire machine is typical in every detail of the precision craftsmanship that has made B&H equipment famous.

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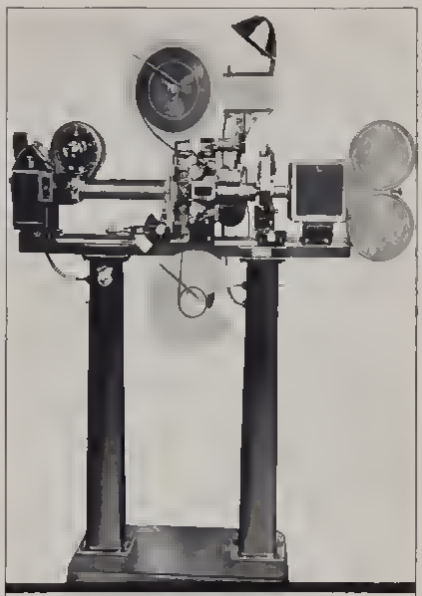
Particular attention has been given to designing the optical system in order to insure greatest possible light intensity. Light changes are semi-automatic, employing a system very similar to that used in B&H Model D Printer.

All controls are convenient to the operator. The whole machine is entirely gear driven, the only belt used is at the 16 mm. end to take up the film in the magazine

Although this new Optical Reduction Printer is primarily designed for reduction from 35 to 16 mm , additional heads for 35 to 35 mm. optical printing, or from 16 to 16 mm , or 35 to 8, or 16 to 8 mm. can be provided.



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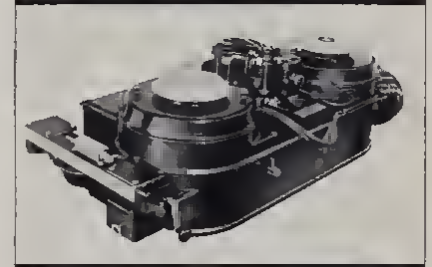

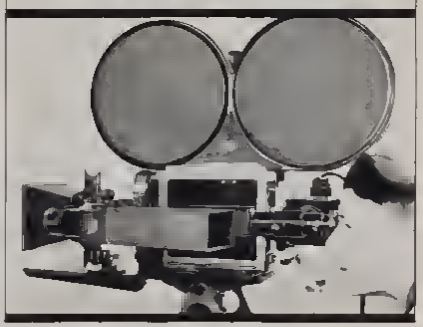

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Limited space prohibits giving more than a few of the details concerning these three new machines in this advertisement For detailed information, use the coupon Bell & Howell Company, Chicago, New York, Hollywood, London *Established 1907*

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The Front Cover

The reason Director Irving Cummings is grinning so enthusiastically in this back-stage picture during the filming of the Twentieth Century-Fox Technicolor production, "Down Argentine Way," is that he has a scene exactly to his fancy. Leon Shamroy, A.S.C., director of photography, is perched atop the stepladder over Cummings' head. Betty Grable, star in the picture, is wreathed in smiles, as is Henry Stephenson, seated back of her, who has a major supporting role.

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SOME REAL ONES

By George Blaisdell

I Want a Divorce

Dick Powell and Joan Blondell, happily married so far as the public knows, had the novel experience of portraying the leading parts in Paramount's "I Want a Divorce." They tried to have the title changed, but of course there was not a chance. It was a mighty good picture, all the way. And as usually is the case in these circumstances there were some exceptional players. Outstanding among these was Conrad Nagel. He always was among the best on the screen, rating highest in those departments most prominent in the acting musts—voice, presence, and the long contributory list following behind.

Jessie Ralph and Harry Davenport are the oldsters—and they are given plenty to do, and how they do put it on! Frank Fay has a comedy role—well done. Gloria Dickson's portrayal ends in tragedy, finely played.

There's a host of laughs, and also there are many scenes where the laugh is not, where nothing is further away than that. The picture is wholesome, leaving one with the feeling it is good to have seen. It is based on a story by Adela Rogers St. Johns, with the screen play by Frank Butler.

Ted Tetzlaff, A.S.C., is director of photography. The work of himself and his crew matches that of all the others.

●

Wyoming

MGM's "Wyoming," with Wallace Beery in the top part, rates well up in the series of Beery productions. It is strong in entertainment value and in suspense. It has comedy value. In magnitude it is adequate. Outstanding perhaps is its scenic quality. Real care has been bestowed upon its locations. Although the picture is in black and white, Clyde De Vinna, A.S.C., again demonstrates what pictorial quality rides in just plain outdoors, his outdoors, whether it be snow-covered mountain or grass-blanketed plain. The photography is one of the main features of the picture.

●

Laddie

RKO-Radio Pictures' "Laddie," from the novel by Gene Stratton Porter, with the screen play by Bert Granet and Jerry Cady, is a picture for the multitude. It's as simple as Mr. Chips—and as appealing. It is one of the rare productions that come from Hollywood—where some one with judgment and even greater courage like Producer Lee Marcus meets up with a director like Cliff Reid and the two of them agree on the solid entertainment that rides in the old-fashioned story of "Laddie."

Little Sister is played by Joan Carroll. This mite is one of the most natural creatures that has happened, even in Hollywood. Nothing can or will try to stop her from going plenty far. And she will be a pleasure to watch. Tim Holt has the title part and plays it right into the soil. And when we come to think of the number of humans in this old world who have either come from the farm or still are on it we begin to get a faint idea of the width and depth of appeal that travels with the theme.

Robert Barrat and Spring Byington have the roles of father and mother Stanton—and they are worth walking a distance to sit in with. Pamela Pryor, daughter of the crusty and twisted Englishman, is Virginia Gilmore. Miles Mander is the Englishman. All of the cast is convincing in the sincerity of its work.

Harry Wild, A.S.C., is director of photography. His camera is made to talk. There are many rural scenes of beauty that add to the charm of the story. Vernon L. Walker, A.S.C., is responsible for the special effects, and these are part and parcel of the quality that obtains in the straightaway production.

"Laddie" is a picture that should not be missed. It packs a fund of laughter and chuckles as well as of more serious moments.

●

Stranger on the Third Floor

RKO Radio Pictures' "Stranger on the Third Floor" is an unusual story in several respects. One of the chief of these, perhaps, is the absence of entertainment of the lighter sort. The picture is heavy. It is unorthodox in style. For instance one of the male characters does a lot of talking to himself or does a lot of thinking out loud. He does so much of it that it becomes a factor in the story.

The same man drinks several cups of coffee late at night, which serves as an alibi for some pretty bad dreams. The scenes are well down before it dawns on the house it is a dream. Two murders are committed by a more or less helpless devil, but they are brutal, even shocking, murders as they are described but not shown. Eventually the killer is run down by a truck. He lives long enough to confess both killings.

Nicholas Musuraca, A.S.C., is director of photography and Vernon L. Walker, A.S.C., is in charge of special effects. Much of the lighting is of a low key, featuring shadows and semi-darkness. It is finely done.

Rangers of Fortune

Paramount's "Rangers of Fortune" is one of those stories where you have to take some things with a grain of salt. You are not quite sure what the idea is, why the people are here or where they are going from here or why. If you will decide to accept the situation as is, take what comes along and like it you will. Fred MacMurray is always likable, and so he proves to be in the present instance. So, too, are Gilbert Roland and Albert Dekker, the two who team with Mac Murray.

The picture is interesting especially for introducing Betty Brewer, the thirteen-year-older who plays an adult. She "plays" her part as does a child, with all the seriousness of which a human being is capable. Her garb adds to the impression she creates—it is of the trailing-on-the-ground kind of a generation ago.

Others in the cast are Joseph Schildkraut, Patricia Morison, Dick Foran and Brandon Tynan.

Theodore Sparkuhl, A.S.C., is director of photography. The company spent a month on the Mojave desert, where the temperature is said to ride as high as 123 in the daytime and the sand stays hot all night. Maybe. But be that as it may, the settings all are built in the desert and much of the lighting is dim. It certainly is "low key." But the photography suffers not a bit. From the photographic side the picture forms an unusually interesting study.

●

Spring Parade

Deanna Durbin in Universal's "Spring Parade" is seen in her eighth picture. Beyond question and without in any manner implying any shortcoming in any of its predecessors it is the finest of the group. Yes, it will compare with and in magnitude and certainly in beauty of settings will surpass "100 Men and a Girl." That is something.

There is an unusual cast behind her. Robert Cummings again for the second time plays opposite her. In many ways it is a difficult part, but most skillfully he complies with its varied requirements. S. Z. Sakall, Hungarian actor, whose first screen appearance in America was in Miss Durbin's "It's a Date," was much in evidence throughout the picture, a winning, compelling personality. Anne Gwynne, in her first featured part, made a distinct hit as the girl in the bakery.

Mischa Auer had a brief but certainly most active appearance as the bargaining villager. On a wager he and Miss Durbin engaged in a whirling wild Hungarian czardas dance which tested the undoubted endurance of the two. Henry Stephenson as the gentle old Emperor,

Franz Joaef, was shown in a most appealing portrayal

The ballroom of the Emperor's palace was the largest set ever built in the Universal studio. Very likely there have been few in the long history of the screen that will compare with it, either for depth or for magnificence Certainly Jack Otterson, art director, had especial reason to be proud of his work in the picture.

Joe Valentine, A.S.C., was director of photography, as he has been in fact through all of the series of eight Durbin subjects The camera played an important part in the great success of the production The ballroom set, including in its scope the entire floor space of the recently enlarged Phantom stage and loaing in its vastness a "house" of 800 extras, was a problem in itself

"Spring Parade" was splendidly made, splendidly created and made.

●

City for Conquest

Warner Brothers has come through with a big one in "City for Conquest." This production has James Cagney and Ann Sheridan at the top for one part of a draw The other and by no means the lesser part of the draw is the story There are countless times in the course of its long running when it digs in—when the more sensitive definitely experience that uncomfortable feeling which undeniably indicates the presence of a real author at work

Not only do the two chief players engage in an abundance of gripping situations during the running of the story They certainly do that But there are many others who enter the tale. Frank Craven, who recently carved such a spot for himself in "Our Town," delightfully creates another part, lesser perhaps in relative importance but bulking large nevertheless.

Donald Crisp in the seemingly minor part of a prizefight promoter emerges from the picture as another of the chief players, another one of those the casual picturegoer will find running through his mind the following morning as he sits at the breakfast table.

Arthur Kennedy as Cagney's brother registers heavily as he delivers a speech at the close of an orchestral performance—and as the picture nears its end—a sequence to remember. The entire performance of the orchestra, which runs long, is splendidly presented, thanks of course to Director Anatole Litvak. The sequence is a blending of long shots with closeups of single and two and three shots and larger groups, interspersed with cuts to vitally interested persons in the house

The prizefight is a memorable one, unusually dramatic in its delineation in spite of the predetermined result by which it was marked It was a tragedy. It was an error of oversight to omit revealing the legal punishment of the crooked fighter.

Sol Polito, A.S.C., and James Wong Howe, A.S.C., were directors of photography, while special effects were created by Byron Haskin, A.S.C., and Rex Wimpy, A.S.C. There was plenty of credit for all. It was a fine picture in all departments And it was one picture which in its music will rate with that at the top fifty years ago, today with a battle, or easily fifty years hence with its contemporaries then

●

Foreign Correspondent

Forty-eight hours ago, it being near the end of August, we looked in on Walter Wanger's "Foreign Correspondent." It was a great picture, from the opening scene to the last And speaking of that last, or at least almost last, there was a scene that would go far to make great any picture in which it might be found

The dialog was from the pen of James Hilton ("Good-bye, Mr. Chips") and Robert Benchley. As the story drew toward its end the audience was drawn nearer the edge of its individual seats the tension steadily was driven upward

A transatlantic plane, filled with passengers, was shot down into the water by the guns of a nation that had just entered a new war

After much effort the passengers remaining on the wreck were rescued by a United States ship The captain of that ship learned one of those rescued was a reporter. Immediately he looked up that reporter and informed him that the ship was a neutral and that it would not be permitted for him to send through a story

Joel McCrea as the reporter had been calling the office of his paper to give them the story The connection had been established when the captain was heard coming. The receiver was laid aside where the captain was unlikely to see it The reporter sailed into the captain, talking to the captain and telling him the story of his troubles and of the others Back in New York the editor's secretary, under a headphone, wrote it down

The reporter who had been sent abroad to get behind the skullduggery and get news, not applesauce, was succeeding He was putting life, and fire, into the words written by the dialog men Maybe he was being helped by Herbert Wilcox, who directed Nevertheless it was a stirring sequence. It was big enough to make any show really great—and it helped to make "Foreign Correspondent" great

There are nearly a hundred characters listed, many of them well known players. The picture should be put down as a must job, because it is one you cannot afford to miss.

Rudy Mate, A.S.C., was director of photography, while Ray Binger, A.S.C., did special photography. Osmonde Borradaile was responsible for the European photography, of which there was quite a bit

●

Hired Wife

Universal well may feel proud of its all-around work in "Hired Wife," produced and directed by William A Seiter. Five players contribute principally to the making of the subject, to its pleasure, to its delight—for delight it is. The theme is larger business, incidentally of the major importance assumed in some business offices of the woman employe

The five players are Brian Aherne, Robert Benchley and John Carroll for the men and Rosalind Russell and Vir-

●

Christmas in July

Paramount's "Christmas in July," featuring Dick Powell and Ellen Drew, is a picture worth seeing It is designed for comedy, with just a few serious moments to bring out more strongly the lighter phases Powell again fails to sing a note, and again demonstrates he can lean on a script made for a non-singer It may have interest to know he is not in the meantime neglecting his voice—that he is in fact steadily cultivating it, against the possibility of later on giving it more serious attention.

There is a strong cast of funmakers, among them Raymond Walburn, Alexander Carr, William Demarest, Ernest Truex, Franklin Pangborn, Harry Hayden and Vic Potel.

Victor Milner A.S.C., directs the photography He must have had an interesting experience, with settings ranging from a twosome on a dimly lighted rooftop with a brilliantly lighted skyscraper background behind him to a crowded New York east side street, filled with vehicles and people in a mad jam, trying to collect all kinds of presents bought and distributed under a misapprehension. Then there is a crowded room with several score clerks that suddenly goes haywire with riotous confusion The photography most naturally fits the mood of the scene

(Continued on Page 471)

Academy Studies Mercury Vapor Lamp's Possibilities

Darryl F Zanuck, chairman of the Research Council of the Academy of Motion Picture Arts and Sciences announces the appointment of a committee to investigate the possibilities for increased use in the studios of the new type mercury vapor lamps recently made available as a result of lamp research The committee will study the lamps in relation to their possible use for studio sound recording, laboratory printing machines and other uses for which concentrated illumination is required

Membership of the committee, which will function under the direction of the Council's Basic Optical Committee, consists of Fred Albin of Samuel Goldwyn Studios, chairman, Lawrence Aicholtz, Arthur C Blaney, Charles Daily, Ferdinand Eich, J G. Frayne, John Hilliard, Edward H Reichard and Carl Schillinger

Burton F Miller of Warner Brothers' Studio is chairman of the Basic Optical Committee

Red Felbinger Writes Vividly Big Tale Around Small Town Stuff

By FRED (RED) FELBINGER

In Cinema Digest, published by Chicago Cameramen's Local 666 I. A. T. S. E.

The caption on his story was "Small Town Stuff"

TWO cops—not one cop—but, we repeat, two cops stood at the corner of Fourth and Anderson streets, waving arms frantically, trying to unsnarl the traffic jam, up above the happy, jostling crowd milling along the main drag, a weary flag-pole sitter moved his buttocks, on his swing, trying to ease the pangs of endurance loafing a bit, as he got an earful of the droning of the loud speaker on the police squad car wending its slow way down below with the continuous dialogue "Watch your valuables, there are pick-pockets in the crowd!"

"Well at least here's one spot where no one will bother my poke," thought the weary flag-pole sitter

Further down the street hawkers were doing a landslide business, and as the evening wore into night more traffic dumped on to Anderson street, and the sultry night air became a human stench to those who tried to scrap their way through the celebrating mob

No, it wasn't New Year's Eve in the big town; neither was it Derby Eve in Louisville, nor the night of the Opening of the National Legion Convention at Chicago; no indeed! This wasn't even a big town—this was Elwood! Elwood, Ind., with a normal population of 10,000; but this wasn't a normal night in Elwood; this was the night before Elwood's one big splash on the front page of the nation; this was Acceptance Eve in Elwood. Tomorrow was to be the big day.

Elwood's own little lad, who ran his own gashouse gang back in his youth—according to the legends floating around town tonight—was coming home on the morrow—and what a homecoming the townfolks were going to stage—assisted by a quarter of a million other enthused souls now pouring in and overflowing every street in the town

The old store over on the corner, which had been vacant nigh on to three years, was a seething madhouse tonight A temporary sign plastered over its front announced to anyone who was interested, "Western Union, for working press only." Inside was congregated the biggest, highest paid assortment of scribblers that ever filed over a sweating typewriter. More words were pouring out of this rejuvenated old store than Washington, D. C., was probably filing tonight.

All this because with the next dawn, Elwood's townsfolks were going to line up to greet their fair-haired boy, Wendell Willkie, whom the Republicans had picked as their standard bearer in this Presidential year of 1940 The biggest story of the week was coming here to Elwood and Elwood was having a jubilee,

Newsreeldom's Mighty Army

While all this merry havoc was gaining momentum a quiet army of lads were rolling into town—one by one—two by two—so that by sundown another of newsreeldom's mighty armies was again mobilized to tackle the story of the day

No newsreel groan boxes were as yet visible, but over at "Willkie Headquarters," in a quiet residence in a more quiet section of South Anderson street, the gang which operates on celluloid was forming a complete program of a one day battle, under very adverse conditions, to get a complete pictorial record of Willkie's big day in the old home town

There in the headquarters, in what formerly was a kitchen, the group huddled around an old desk—making arrangements for planes to fly overhead for a shot of this biggest political rally in U. S. history Special car stickers were being worked out to gain recognition in moving through the swarming mob, on the morrow, shipping plans were made with Railway Express officials to fly the stuff out to New York by quickest dispatch; other crews were coming in, reporting on the camera stands that were erected in Callaway Park, and the time was designated to have sound equipment set up and in working order, shortly after dawn

Every angle was worked out in minute detail and as the clock neared 11 p. m. tired newsreelers sat down, each one with a massive printed copy of the Acceptance speech, which was to be delivered on the morrow.

Freshly sharpened pencils were passed around and the "kill" was on—on, to last into the wee small hours of the morning, when tired revelers were to be

Fred Felbinger

FRED (RED) FELBINGER is and has been for a long time one of Paramount's ace newsreelers His home when he is home is Chicago From that town he radiates for distances of hundreds of miles When he does radiate it is a good sign a major event is in the making, something outstanding

Red is much more than a good newsman He has a very observing eye and a receptive mind Things sink in—and remain. Ten years or so ago he began having brain storms to put down on paper some of the events that had passed in front of his lens He did that seemingly little thing and with marked success The accompanying story is just another one of these Most vividly it speaks for itself It was printed in Cinema Digest, the monthly publication of Local 666, I. A. T. S. E. of Chicago, of which by the way Fred Felbinger is an associate editor

We have requested William H Strafford, editor of the magazine, to permit us the privilege of reprinting this lively tale in The American Cinematographer. He has kindly given his consent We are sure our readers will join us in thanking Mr. Stafford for his courtesy

Fred (Red) Felbinger, newsreeler and newswriter, too

drooping like "last night's highball on the mantel on the morning after."

If you've never tried to "cut down" a speech copy for the highlights, then you've never really suffered. It means reading the whole dang thing word for word . . . then re-reading . . . then crossing out paragraphs . . . putting them back in . . . cutting out more . . . reading, out loud, the finished job . . . with someone timing you . . . only finding that it'll take too much footage . . . tearing the damn thing up . . . getting a fresh copy . . . starting all over . . . and finally discovering the print blurring before your eyes.

More changes . . . and changes . . . and then you have it . . . it seems all so simple now . . . and why did you ever have to fight it out . . . why, there was nothing to it . . . then you discover you are wringing wet . . . well, over to the hotel for a shower . . . and a little shut eye. So you look at your watch . . . it's four a. m. . . . well no time for much sleep now . . . what shower? . . . what hotel? . . . plumb forgot, no space over at the hotel tonight . . . got you roomed out over at Mrs. So-and-So's . . . don't even remember the street address . . . just that you walked down past the Elk's Club and turned over two squares . . . well, this certainly ain't no time to disturb honest folks.

So you amble down to the Elk's Club . . . it's open all night . . . the lid's off in Elwood tonight . . . this night of nights . . . there you find old Loot Shea . . . the newsreel game's one and only gate-crasher holding forth . . . waiting for you . . . Shea has found lodgings over at the local gym where they are housing the visiting constabulary . . . but Shea admits, "who is going to be able to sleep there anyhow!"

So you stand there at the Elk's bar, with your special privilege badge, now wilted and running down your tattle-tale gray shirt, and you try to down the bartender's conception of what he interprets as a "Tom Collins," and you watch the dawn making a feeble entry which works itself into a broiling day of around 110 degrees in the shade.

Then the realization bangs you right between the eyes that it's "Eyemo" time. So you start banging out rolls on the Big Day. There's shots of the mob . . . close ups of types . . . air shots . . . parades arriving . . . more parades . . . parades . . . parades . . . everything seems to be coming in parades. Elwood is just one parade after another . . . people marching . . . singing . . . bands . . . real live elephants . . . bands . . . bands . . . crowds . . . parades . . .

Too Late for Breakfast

Jeez! you got eight hundred feet of this junk rolled up already . . . how about some breakfast? . . . forgot all about it . . . too late now, though . . . why it's lunchtime already . . . so you gobble up lunch . . . a wilted ham on petrified rye . . . made two days ago by ingenious housewives for "The Day" and the bottle of pop you down . . . what's left of it after the foam runs off the top.

Then the realization slaps your punch drunk brain . . . the "Willkie Special" is due, so you duck for the railroad yards. There the camera truck jampacked with newsreelers, still men and God knows how many amateurs, is waiting for the climax of the Big Day to get started. Wendell Willkie comes out on the back porch of the train and waves.

Cameras start to roll. Willkie and his party get into the official car and a dozen cops on wheels take positions around the hero of the day and the big show is on. Slowly the camera truck precedes this man of the day through the shouting, waving, handshaking, autograph seeking mob.

There's Jack Barnett, perched up on the bumper of Willkie's car, grabbing an Eyemo shot, while the lads on the truck up ahead are screaming for Jack to "get the hell out of the picture." There's Sam Savitt changing Akeley magazine after magazine, with his perpetual cigar chewed right down to the roots.

Willkie stands there with both arms upraised in characteristic pose and Traynham swings on the four inch. On and on, the procession drags through the frenzied mob, as the sun beats down in egg-frying proportions on the wilting newsreelers, and still the big story is ahead—the speech out at Callaway Park.

Here's the park now, if you see it through the dust, the dust that is searing your parched throat. Now you know what an awful death that one must be—to die of thirst on the desert. Then the battle to the camera stand. The last guy of your gang that you see is old Ted Shaefer struggling through the jampacked mob, juggling a big Bell & Howell.

Finally you feel yourself pulling and tugging up a ladder and there you are, on the camera stand, all set to knock off the speech in sound. Tony Caputo is running off shots of the crowd before Willkie mounts the rostrum.

Montemurro is gauging the light and stopping his lenses down. Rossi is trying to lift an outfit into a two-by-four space atop an old shed, for a sideshot, but as quickly as he gets the camera half way up some unadvised bouncer shoves his foot down on Rossi's neck to move him back.

There's Whitey Hafferkamp—old-timer around the studios—getting his first baptism under fire as a newsreeler on a big story. Whitey must be knocking off a couple of extra pounds on this, his newsreel debut.

There's Willkie now! Hit the button! The film starts to roll . . . Willkie starts to speak . . . paragraph after paragraph . . . magazine after magazine . . . and on and on . . . the speech is over . . . Willkie departs . . . the crowd dissolves . . . all you see is dust . . . overturned seats . . . sticky dead pop bottles . . . debris . . . more dust . . . you knock down the outfit . . . you can the stuff . . . the expressman grabs it . . . you sit down and find out your mouth is on fire . . . a pop vendor is folding up for the day.

You grab a bottle . . . you put it to your mouth . . . it's as hot as the sun beating down on you . . . but you suck away at it. Somebody yells to you . . . it's a Western Union boy . . . a telegram . . . you open it . . . thought so . . . another assignment . . . you get the old map out . . . and figure awhile . . . and then you start driving.

Well, anyhow, there's a good hotel there . . . a shower . . . a decent meal . . . and besides you've got the big story of the week in the can. Willkie has accepted.

Making Black and White Prints from Kodachromes

By HATTO TAPPENBECK

HOW often did you wish that you had taken some black and white pictures instead of kodachromes? Not everyone is equipped to make color prints from his slides, and therefore the thought of prints is usually abandoned However, color prints are being made, but the careful and scientific manipulation of the various phases of making paper prints in color do not bring them within the reach of everyone who takes kodachromes regularly and has only a moderately equipped darkroom at his disposal.

When you look your color slides over you may desire to make a black and white Christmas card from one or the other scene, or perhaps a birthday card, or even a salon print in sepia This is really not difficult at all, and in fact a fascinating pastime You can vary the results greatly by the methods you employ. If you do not like the one way to make your negatives or have not the facilities for it you can use another more suitable one

In making kodachromes and color pictures we always start out with black and white negatives or images and add colors later on or change the black and white by some chemical or dye process For black and white pictures from color slides we reverse the procedure. There are a number of methods which will be discussd in this article

The different ways employed in producing color images also gives us valuable hints on how to obtain black and white negatives of various contrasts and quality The principal factors are the tone value of the kodachrome and the light source used in making the negative

Assuming that the development is regulated by the film and the proper developer used we now find that inasmuch as the color value of each kodachrome slide film is a fixed item the means of varying the resultant negative lies largely in the modification of the light source itself.

Avoiding Second Camera

I do not refer to the variations in exposure This is best determined by trial and error and is fixed by the speed itself. The color value of the light and its modification by filters is necessarily of the greatest importance.

On the pages of the American Cinematographer you have often seen reproductions from kodachromes with the accompanying articles. And you may have wondered how they were made Before I looked into color photography I gathered all the information available at that time about the possibility of making black and white negatives from them This eliminated the necessity of carrying two cameras at all times on trips.

There are several ways of making the negative from your kodachrome, by contact printing, by projection printing, and by copying or rephotographing The latter methods have the advantage that you do not have to pull your mounted slides apart

Besides that you can vary the size of your negative from the original kodachrome to suit your requirements I am here only concerned with the making of the black and white negatives from the kodachrome The contact prints or enlargements are then made in the usual manner

It is understood that we use panchromatic film for best results For contact prints we do not use a regular panchromatic emulsion, because it is obvious that the great speed of such a film necessitates the handling in total darkness and makes the work rather difficult. Panchromatic duplicating negative film is considerably slower and can be handled and developed in subdued light The speed of this film rates at three Weston The fact that we use panchromatic film assures a fair degree of correctness in color values

In contact printing we use our reg-

New York harbor at sunrise.

Field of daffodils in Holland made from an original kodachrome

The original kodachrome from which both pictures on this page were printed on the same grade of paper leans towards the blue side. The difference in the prints lies in the treatment of the negatives which are split between the same blue. The one on the right has been made with correct exposure light which the one on the left was exposed on a bit heavier with daylight globes at the same setting and printed to the same value.

ular printer which we have for our paper prints. The size of the kodachrome is immaterial, either miniature or a larger size. We can obtain the duplicating negative panchromatic film in 35mm width or in cut film as required.

Red Lights Out

The colored picture is masked off properly and the red bulb in the printer is replaced by a small, dim green bulb with a few layers of tissue paper over it. This prevents fogging the film when it is being adjusted over the kodachrome. This film can be handled in subdued green light in the darkroom during the printing and developing. Red lights are out, as they will produce fog.

The negatives we obtain by the contact printing method can be varied in several ways. The light source has a great deal to do with the quality. Under ordinary circumstances we use mazda lamps without a filter which will give you a pleasing result. Replacement of the regular incandescent lamps with daylight globes will accentuate the blue and result in a more contrasty negative.

In extreme cases you can produce by this method almost an outline of the picture without much detail. Definite directions can only be given for each specific kodachrome. Slight variations from a normal and well color balanced picture will require a slight modification. However, for average results of good quality the directions given will prove satisfactory.

A very light filter between the light source and the slide often improves the negative. In many cases apart from the change produced in the quality of the light the filter will reduce the intensity sufficiently to avoid changing to smaller globes. In projection printing and in copying kodachrome slides the amount of light may have to be increased.

Select Filter You Need

The question is what kind of filters to employ. We must bear in mind that a filter lets the rays of its own color pass unhampered while it holds back others which we cannot readily see with our eyes. A book on Wratten filters, published by Eastman, gives a diagram for each filter the company manufactures.

From these charts you can select just the filters you need to hold back a little bit of red or to decrease slightly the blue or the green contents of your kodachrome. A good way to test your filters is to put them in front of your projector lens. The picture on the screen will tell if the filter improves it or not, if it is too heavy, or if it has the wrong color value.

The second method of obtaining negatives from kodachromes is by projection printing. This is especially desirable where a larger negative for direct contact prints in black and white is wanted. The problems involved are the same as in contact printing as we use the same film, but we do not have to take the slides apart. The enlarger has to be focussed properly in each case.

About Developing

An autofocus enlarger cannot be used for this purpose unless the kodachromes are unmounted. Even then a slight adjustment is usually necessary. In order to avoid readjusting the enlarger itself put a thin piece of cardboard on the easel and raise the negative just enough to get a sharp focus.

The red enlarging disk has to be replaced by a green one, as we are using panchromatic film. It is even better to discard the focussing disk entirely and to put the negative film in the correctly marked space before the light is turned on for exposure.

It might be proper to say at this time a few words about developing the film. For the negative duplicating panchromatic film a diluted postive developer or the well-known Eastman Kodak D-76 developer can be used. A test development will determine the proper time at 65 degrees F. as well as the right exposure when a normal kodachrome slide is used.

Assuming that most of us have not the facilities on hand to determine the Gamma values accurately we judge the negatives by inspection and determine which ones have the best printing qualities. These tests show that we can achieve almost any results desired by adjusting the printing time and the developing time. The best negatives result from a normal developing time and a medium exposure which will produce negatives full of detail but without excessive contrast.

Both types of developers are good for that purpose. I have been able to get just as much undesirable contrast with D-76 as with the positive developer, but on the other hand by properly balancing the exposure I have obtained quality negatives from the very same kodachrome slides.

Some workers have complained that they could not get a sharp negative from their kodachromes. In most cases this was due to the fact that the kodachrome was not sharp in the first place, although one had the impression that the picture was sharp on the screen.

A pleasing soft effect enhanced the picture and often produced a great deal of depth. However, this was merely an illusion. If the picture was focussed correctly, i.e., at the principal object in the scene, the fault may lie in the lens itself.

Copy with Your Camera

It may not be color-corrected. If the lens is stopped down this fault is minimized and may not be detected until some pictures are shot at the full aperture. A good optical company can easily determine if the lens is corrected for color. Nearly all new lenses are manufactured that way.

One of the most convenient methods of making negatives from color slides is by copying them with your camera. The slide is illuminated with an even light. This is easily accomplished by using your contact printer, inserting a

(Continued on Page 477)

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Exposure Meter Accuracy Means Uniform Results

By R. E. KIDD,
General Electric Company

G-E exposure meter, Type DW-48, with cover closed, set for reading in bright light

EVERY photographer who values the importance of uniformly correct exposure insists on checking the exposure results obtained with an exposure meter before adopting the meter for regular use

In the motion picture industry the matter of thorough checking is even more important because the professional cinematographer is not only interested in the results obtained with a single exposure meter, he is primarily interested in the limits within which all meters of the same manufacture are held.

Hood removed, meter is pointed from subject to camera for dim light reading G-E light sensitive cell characteristics

A number of meters, used by different cinematographers, will enter into the shooting of a complete production. All of these meters must check each other if accurate control of negative density is to be obtained

The various cinematographers are often in locations far distant from each other shooting scenes which must later be tied together to form a complete production Each must be assured that his meter will give him the same exposure as any of the meters used by his coworkers

Outstanding Advantage

The outstanding advantage of the G-E exposure meter is its accuracy Every meter is held within such close limits that uniformity of results is assured The same exposure data can confidently be expected, no matter which General Electric meter is picked up for use This is a vital point—especially in an emergency

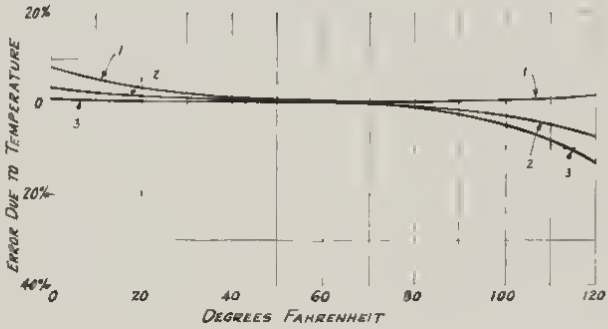
Although not as important as accuracy, a very convenient design feature of the G-E meter is its calibration in foot-candle light units These units are the accepted standard for setting light levels, and as such are of primary importance to the cinematographer when duplicating a set-up in a different locality and interpreting the data used previously

The maintenance of the desirable features and continued production requires extremely close control of photoelectric cell and electrical instrument characteristics during manufacture and tests. The following is a list of some of the characteristics regularly tested and controlled during the manufacture of G-E photoelectric cells and instruments Each of them is important in the overall performance of the exposure meter.

1. Current output
2. Temperature performance
3. Fatigue
4. Spectral sensitivity
5. Performance under humid conditions
6. Stability

Current output of a photoelectric cell for any given illumination must be sufficient to operate a sturdy electrical instrument and give good sensitivity The electrical instrument design must be closely coordinated with the design of the photoelectric cell characteristics because current output for any given illumination

FIG. 2
GENERAL ELECTRIC EXPOSURE METER
GOOD DESIGN
(300 OHM INSTRUMENT)



CURVES 1 & 2 SHOW AVERAGE ERRORS AT LOW (20 F.C.) AND HIGH (60 F.C.) ILLUMINATION

CURVE 3 SHOWS EFFECT OF INCREASED (120 F.C.) ILLUMINATION

depends on the resistance of the instrument

As a matter of interest, curves of current output of the General Electric photo-cells for different resistances and varying illumination are shown in Fig. 1.

Temperature Performance

The temperature error of an exposure meter depends not only on the characteristics of the light cell itself but also on the resistance of the electrical instrument with which the cell is used. Also, the temperature errors are affected by the intensity of illumination on the cell.

The designer must, therefore, carefully correlate the construction and performance of the cell with the design of the electrical instrument to obtain a compromise which will result in the least possible variation with temperature over a wide range of illumination. Fig. 2 shows the temperature error in a General Electric exposure meter.

Fatigue

All photoelectric cells have a tendency to change in output temporarily after prolonged exposure to light. In order to reduce these errors to the minimum it is necessary to design and manufacture to very close limits. This tendency to fatigue is also affected by the resistance of the electrical instrument and the intensity of the light.

Again, the correlation of design of the cell and instrument becomes important in order to obtain the accuracy demanded by the exacting tests these instruments must pass. Fortunately, the same instrument characteristics which minimize temperature errors also tend to reduce fatigue.

Spectral Sensitivity

If a cell were limited to only that light which can be seen by the eye, it would be seriously handicapped in indicating the complete range of radiation which will be effective in making pictures.

Fig. 3 shows the spectral sensitivity of the General Electric cell compared to that of the average human eye and that of a typical panchromatic emulsion. It can readily be seen that the cell closely approximates the response of the panchromatic emulsion.

Performance under Humid Conditions

Since light cell output is also affected by humidity, every General Electric photoelectric cell is protected by a transparent film of moisture-resistant material. This protective film has been thoroughly tested under the humid service conditions encountered in the tropics. Results have been most satisfactory.

Stability

Time has shown that some types of photoelectric cells have given good performance for six months, a year, or possibly even two years, and then suddenly "gone dead." The General Electric Research Laboratory in developing the G-E cell has coordinated all work with extensive life tests.

This cell has now been in production for about seven years. Groups have been placed on life tests periodically, and none of these, including the first group, which has been exposed to strong light for seven years, have shown any permanent change with age.

Nevertheless, every slight change in manufacturing technique for the purpose of improving the cell is followed by extensive life tests on the resulting product before such a change is adopted in production.

Fig. 4 shows such a test in progress. This assures continuous accuracy of the exposure meter as any ageing of an electrical instrument is negligible.

Assembly and Calibration

The assembly operation which results in the complete exposure meter is performed in a room that is spotlessly clean and free from dust. Operators and even visitors must wear starched, white coats that prevent the spread of clothes lint, the smallest particle of which may cause trouble in an electrical instrument.

Experienced operators carefully assemble the various parts with the skill of

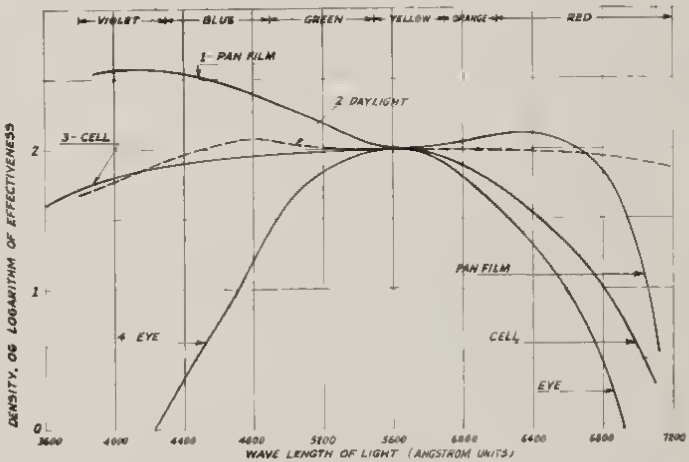
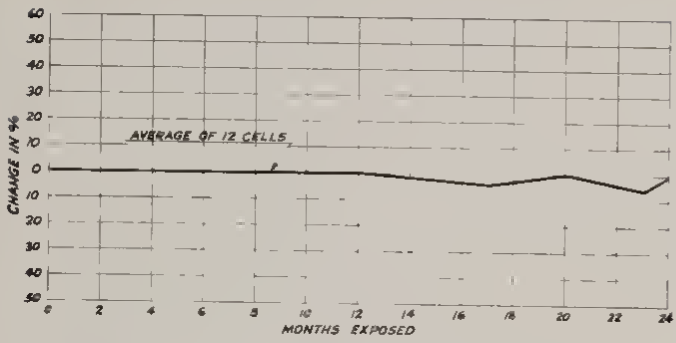


FIG 3 - CURVE CLASSIFICATIONS

1 - RELATIVE DENSITY PRODUCED BY VARIOUS WAVE LENGTHS OF LIGHT
2- RELATIVE PROPORTIONS (LOGARITHMIC AS SEEN BY FILM) OF VARIOUS WAVE LENGTHS IN DAYLIGHT
3- " EFFECT " " " " ON CELL
4- " " " " " " ON EYE

FIG. 4

PERFORMANCE OF CELLS EXPOSED TO BRIGHT DAYLIGHT (PLACED DIRECTLY BELOW A SKYLIGHT) NOT PROTECTED BY HOOD OR MULTIPLIER



watchmakers, using tweezers to put each piece in position and frequently working with the aid of strong magnifying glasses Inspectors check the operations frequently all along the assembly line

Following assembly, each meter is accurately calibrated under standard light sources by comparison with the highest accuracy laboratory instruments Calibration is performed at a number of points along the scale of each instrument to be sure that the accuracy is uniform and applies to the entire range of illumination

Conclusion

For exposure meters in general it is considered good to obtain an accuracy of 25 to 35 percent in reading light However, extensive test data on the General Electric meter, confirmed by results from the field, show that an accuracy in the order of 10 percent is attained This is primarily due to the design of electrical instrument element selected

Pan American Cuts Time to South America Nearly Half

An important step forward in increasing trade and travel between North and South America will be inaugurated by Pan American Airways System October 2, when a special series of strato-clipper cruises will be instituted to Rio de Janiero, at a saving of 32 per cent over regular round trip fares and usual travel expense

Passengers, leaving Miami in new four-engined Strato-Clippers, will arrive in Rio in only 2 days 7 hours, full 48 hours faster than previous flying time

The new Strato Clippers are designed to fly "over the weather." For extra comfort, only 20 passengers will be carried in the giant Strato-Clippers, which are of 33-passenger capacity

Agfa Issues Greeting Card Outfit With Negative Masks

Amateur photographers who have postponed making Christmas or New Year greeting cards photographically for lack of an attractive design or adequate material will be interested in the new Agfa Greeting Card Outfit No 1 which is now available

Included in this Outfit are six 5 by 7 inch negative masks, each one of which has a two by 3 inch clear opening over which can be mounted the negative of the photograph to be used on the card. The six negative masks provide considerable choice in type and presentation of the greeting, some being dignified, others more informal Each outfit also includes a sheet of tracing paper with instructions for its use when it is desired to print the signature photographically along with the greeting and illustration.

Entirely made in U.S.A this Agfa Greeting Card Outfit is available through regular photographic dealers at $1.69 list.

Available in connection with this new Greeting Card Outfit is a special surface of Agfa Cykon Paper, known as Greeting Card Special.

Sherman E. Surdam Honored by National Photographers

Sherman E Surdam, commercial and portrait photographer of the General Electric Company, has received announcement of the award to him of the degree of Master of Photography by the Board and Council of the Photographers' Association of America The announcement was made by A. R. Buehman, president,

The degree is the highest recognition attainable by professional photographers in the United States Surdam's work has provoked highest praise throughout the world and his photos have been hung in the leading salons of the country

Many medals and other honors have been conferred upon him and he is a member of several photographic organizations He is a Fellow of the Royal Photographic Society of Great Britain, president of the New York State Professional Photographers Society, secretary and treasurer of the American Society of Photographers, and honorary president of the Schenectady Photographic Society.

Chicago Cinema Club

From News Flashes

Ever since the first meeting of the Chicago Cinema Club, May 1927, there has been a steady march forward. During the past years many gallons of water have passed under the bridge We have seen the growing interests in moviemaking and the rapid strides the manufacturers have taken

There are many members of this club that started taking movies and a club at the same time This was years back when two types of film and one or two lenses were all that were available for the amateur

In those years were laid the foundation of the Chicago Cinema Club, but only with the constant interest and hard work did this little band of amateurs proceed. The progress of this club, or any other, depends only on the willingness with which the members put their shoulder to the wheel and their cooperation with the various committees to get their best response.

With the beginning of a new season we have a new home with every possibility to make this club not only the oldest but the top club in the country.

Commencing September 5 this club will occupy its new home at 20 North Wacker Drive, Floor 36 Our quarters will be with the Chicago Lighting Institute, where you, as members can test and use all types of new lighting equipment and have the use of a model home of five rooms for backgrounds There is also a fine lecture room and each third Thursday of the month we will use the Model Theatre

There has never been offered to the membership of a club looking for improvement in their hobby such an opportunity as your officers and directors have for the past year been making possible for you and we ask your cooperation in this new and glorious movement

We invite you to visit us

Cinema Club of the Oranges

The Cinema Club of the Oranges was organized in April, 1934 The regular monthly meeting is held the third Friday of the month, except July and August, in Saint Paul's Parish Hall, Prospect street, East Orange Visitors are welcome at these meetings An informal meeting is held each month at some member's home No business is conducted, the evening being devoted to informal discussions of moviemaking problems and the criticism of films

The officers are Walter R Pemberton, Jr president; Vernon Lewis, vice president, Gordon T Butz, secretary; Claude E Benton, treasurer, Nelson W. Lockwood, editor, Fayette C Anderson, assistant editor

PHOTOGRAPHER BRYAN CROWNED BY POLGAR

ARNOLD GENTHE, one of the world's great photographers, can register a positive reaction for the camera as well as evoke one from a subject as you see by this picture, made at the Ford Exposition at the New York World's Fair. The artist is shown here on the treetop-high terrace where Ford Exposition officials entertain special guests.

He was one of a large group of notables attending a party, and the camera caught him thoughtfully approving of the pictures one sees in the popular motor pavilion

Genthe is represented in the Metropolitan Museum and Public Library of New York, the Library of Congress in Washington, the Boston Museum of Fine Arts, and in the Archeological Institute of Rhodes He is known popularly for his illustrations of such books as "The Book of the Dance" and "Impressions of Old New Orleans"

Genthe turned his perceptive eye backward on his own life, which has been one picture after another for decades, in an autobiography, "As I Remember" He is one of the notables whose visits to the Ford Exposition make its guest book read like a miniature Who's Who of the arts as well as business, science, politics and society

This diverting glimpse of two vivid American platform personalities also were snapped at the Ford Exposition. It's the famed Hungarian psychologist and mind reader, Dr Franz Polgar (center), taking as his victim the noted photographer of world events, Julien Bryan Dr Polgar's beautiful accomplice is Frances Wells, daughter of the Far Eastern explorers, Mr and Mrs Carveth Wells

That is Miss Wells' hat on Julien Bryan's head The demure toppiece moved over in response to Dr. Polgar's magical mind reading; he just asked Julien Bryan to think hard where the bonnet might be instead of on Miss Wells' bright locks, and—presto!—here it is.

The photo also demonstrates that even a man who follows disaster has his merry moments. Julien Bryan, a former Y. M. C. A. worker whose hobby became his profession, has filmed war and upheaval in all the hot spots of the Old World. He made and possesses the only motion pictures in existence of the fall of Warsaw In his illustrated lectures he covers Poland, Finland, Turkey, Soviet Russia, Nazi Germany, Mexico and the Far East

•

Mr Bryan, in whose hand will be noted his Leica, has made the statement within a year that in seven large countries of Europe and Asia he has taken over 30,000 Leica stills At the same time he admitted he had made nearly a half million feet of motion pictures Probably by this time the amount of the latter is well in excess of the half million, as in the last year he has added to his footage that which he exposed in Poland at the time of its devastation—which by no means was inconsiderable

Arnold Genthe, one of world's great photographers Photo by Charles De Sorra

Cameraman Jim Gemmell Is Living Life at Its Intensest

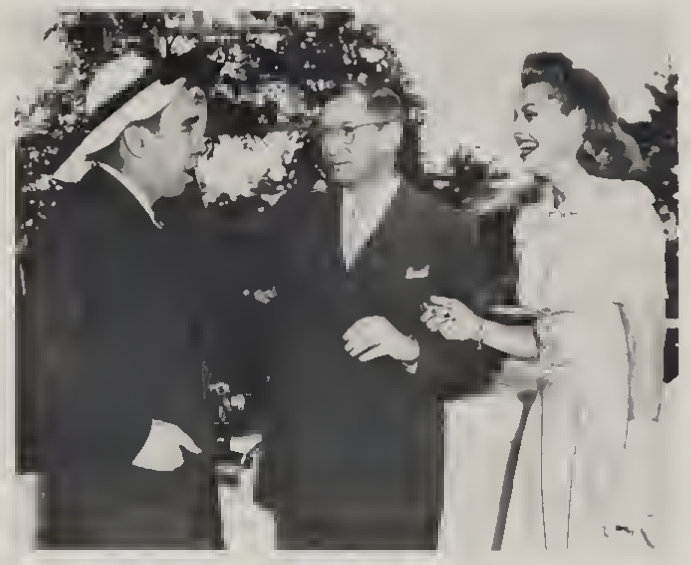
The Kinematograph Weekly of London (under date of Aug. 22) will pardon us for quoting that sturdy magazine in an item we are sure will have unbounded interest for all of our readers:

"If to hang one's life between a risk and an opportunity is the test of real living then the newsreel cameraman in war time knows life at its intensest. Narvik, Namsos, Dunkirk, have provided thrilling moments when the wall between life and death has been very thin.

"One is brought to such reflections by the risks which attend the 'shooting' of air attacks on British convoys in the Channel The most thrilling of these attacks was shot by Jim Gemmell of British Paramount News, who in the last war served in the R. F C. and R A F. Photographic Section, and has been with Paramount since its start in England.

"He shot the whole of the raid on Dover Harbor with shrapnel falling all around him, and with a 40-inch telephoto lens (the same lens which was used for some of the Coronation pictures) he filmed the R A F raid on Calais from a sand-bagged cliff-top eyrie Occasional attentions by Messerschmitts do not deter him, and not a raid takes place without his getting some sensational shots"

And Gemmell is but one of many who are risking their all to get some thrills for the man out front in his comfortable seat. When looking on this stern work surely the cameraman is worthy of a big thought



Left to right, Julien Bryan, motion picture and still photographer-lecturer-statesman, undergoing an experience with Dr. Franz Polgar, Hungarian psychologist and mind reader The amused young woman is Miss Frances Wells, daughter of Far Eastern explorers, Mr. and Mrs Carveth Wells
Photo by Fred Davids

8mm. Cameras Behave Much Like Their Bigger Brothers

By CLAUDE W. CADARETTE

SINCE the introduction of 8mm motion picture photography a great advance has been made in this equipment, giving the amateur more versatile cameras and projectors, finer lenses and other units to aid him in making motion pictures with a professional quality. His choice of a camera is a problem of individual requirements.

For those amateurs who film only travelogues or family records, the simpler cameras will meet his needs, while the more ambitious amateur who shoots scenarios, commercial films or documentary subjects may desire a camera having many features incorporated in it to aid his more technical work.

This technical group usually demand a camera which will hold 50 or 100 feet of double width 8mm. film and will expose twenty or thirty feet of film at one spring winding. The casual amateur is satisfied with a 25-foot spool of double width film, as his subjects may be fully covered in this length and he does not have to wait or shoot off the balance of a large roll to see his results.

What It Takes

A good 8mm camera has certain features that are necessary for motion picture work. It must have a lens free from defects, precision built mechanism, film footage indicator, clear view finder, and a strong metal housing for the movements.

The fixed focus lenses are adequate for all ordinary motion picture work, however, where close work is needed this lens is not as desirable as the focusing lenses due to the doubtfulness of the critical definition. For outdoor work, under good lighting conditions, the fixed focused f3.5 allows ample light to reach the film, but indoor work or extremely poor light conditions demands faster lenses.

The lens of a camera is its eye. It has the function of forming an image on the film surface that is true in every respect to the original object. The simple, single element lens, such as a reading glass, will form an image, but it does not have the ability to correct all the problems that confronts it.

As we view the image formed by a simple lens, the image appears fairly good, but on closer examination we note that the sharpness is not all to be desired, and that the edges of the image appear to be distorted. All of these defects are very glaring when placed on film and enlarged.

Spherical Aberration

We know that a prism will bend a ray of light, but as the ray bends some colors of it bend to a greater extent than others. A lens also bends light rays, and if all colors do not bend at the same rate they will not form a sharp distinct image. It has been found that a combination of lenses will overcome this difficulty.

Other problems had to be eliminated with this so that a lens could be perfected that would form a sharp, true image. The rays of light that travel through the center portions of a simple lens do not converge to a great extent, but the outer edges of the lens refracts the rays to a pronounced degree.

These rays do not meet at the proper point on the film surface and make a defect known as spherical aberration. A simple lens, moreover, fails to reproduce straight lines on the edges of the image.

The intensity of this distortion depends on the form of the lens and the size of the diaphragm opening. An image formed by this lens may appear sharp in the center but blurred on the edges. To sharpen the edges the lens must be refocused, but this will then throw the center out of focus.

It is necessary, for photographic purposes, to construct a lens to overcome all of these defects by the proper combination of the elements and types of glass used in each element. Some elements are cemented together with Canada balsam, while others are supported separately. Eight millimeter camera lenses are composed of three and four elements, with full correction and are known as "anastigmat lenses."

The fixed-focus f2.7 or f3.5 contain three elements supported separately with the diaphragm between the front and rear element. The faster f1.9 and f4.5 telephoto lenses have four elements, shaped differently than the slower lenses, to give perfect reproduction at wide apertures and to allow for critical focusing at small distances.

As to Focal Lengths

The focal lengths of each lens vary slightly, the f1.9 being 13mm. long, the f2.7 13.31mm., and the f3.5 as 12.7mm. The telephoto 1½ inch f4.5 has a focal length of 38mm. The focal length of a lens is the distance from the center of the diaphragm to the film when that lens is focused on an object beyond 100 feet from the camera.

The area that is covered by a lens is determined by the focal length of the lens in use. Long vocal length lenses, covering a small film surface, give us the effect obtained by binoculars and are known as telephoto lenses. Thus a 1½ inch telephoto lens will produce an image that is three times as long and as wide as our standard ½-inch lens.

A source of light affects the emulsion of our film according to its intensity and length of time it acts upon the emulsion. If the light source is weak, we must allow it to affect the emulsion for a greater length of time or permit more light to enter the lens. Motion picture cameras can let light act on the emulsion for only a fixed length of time.

This time varies with different cameras, from 1/30 to 1/50 of a second when operating at a speed of 16 frames per second. Inasmuch as the light varies in intensity, day by day and hour to hour, we must have a means of controlling this intensity to get good results.

Like Iris in Eye

The most simple way to have this control would be by some device which would permit only a fixed amount of light to pass through the lens, a device which would act like the iris in your eye, opening wide in a weak light and closing to a pinpoint under intense lighting conditions.

In our camera lenses a device called the diaphragm is inserted, consisting of

thin metal blades which simultaneously close toward the center as the ring mount is turned The size of the opening controls the passage of light, but its value is in direct relation to the focal length of the lens.

A standard scale has been made, whereby each mark on the lens barrel gives us the exact value of light hitting the emulsion regardless of the lens we use An f4 5 opening on a ½-inch lens is smaller than an f4 5 opening on the telephoto lens of 1½ inch focal length However, the amount of light reaching the film is the same.

The relation of the opening of the diaphragm and the focal length determines the exposure. The focal length is divided by the diameter of the opening This quotient is known as the "focal" or "f" value of the lens If the focal length of the 1 9 lens is 13mm and the diameter of the diaphragm opening is 1⅝mm , the f value of that diameter is 8 Likewise if the focal lengths of the telephoto lens is 38mm and the diameter of the diaphragm is 4¾mm , the f value of the diameter is also 8

F Values

The f values of a motion picture camera lens are generally marked from f1 5, 1 9, 2 7, 3 5, 4 5, 5 6, 8, 11, 16, 22 The relation between two f values is the inverse relation between the squares of their numbers

Example What is the difference in light transmission between f4 and f8? Square of 4=16 and the square of 8=64 64 divided by 16=4, therefore f4 is 4 times faster than the f8 stop allowing 4 times the amount of light to enter the film. Foreign cameras use a different scale to designate the diaphragm openings, known as the "Uniform System,"

Sixteen Frames Economical

Sixteen frames per second renders a smooth movement on the screen and is the most economical speed for film consumption To keep these pictures flashing on the screen at this rate it is necessary to have a movement in the projector that will bring each picture behind the projection lens and cut off the lamp illumination as the film is traveling frame by frame

The frames are carried to the lens through a passageway or gate. Equidistant holes or perforations are provided on the side of the film A small claw grabs each perforation and pulls one frame into the aperature of the gate While this film is moving, a metal blade revolves before the lamp and cuts off the illumination

When the film travel has stopped, the blade moves on and lets the illumination pass through the frame and the lens forms the image on the screen This performance is done at a high rate of speed and the screen image appears to move A movement of this nature is also necessary in the camera, the shutter closing off the light until a new frame is brought into position.

The shutter opens, exposes the frame, closes, the film is moved one more perforation by the claw and the shutter reopens The normal speed of this motion is 16 frames to each second. As the picture is projected at this speed the motion appears natural, and at the same rate as in the original A loop must be provided at the top and bottom of claw movements to give a freedom in the film travel

Tricky Job

The loading of a camera must be done in a careful manner, to prevent the jamming of the film or undue exposure of it to light Our film has a protective coating on its back to render it light proof, but if you allow the film to loosen on the spool the light can leak around the edges and fog it Keep it tightly wound on the spool without cinching it and unwind only enough to thread the camera.

If your camera has a large sprocket wheel to feed the film, be certain that the sprockets are thoroughly engaged in the perforations before locking the clamp over it Insert the film in the gate behind the lens leaving a loop above and below it The film then is placed on the lower part of the sprocket wheel to feed to the take-up spool

A small slit is provided in the core of the take-up spool to fasten the film end. If this is not properly fastened, there is a danger of it slipping out and jamming inside the camera. Before replacing the cover on the camera, test the threading by running 6 or 8 inches of film to assure yourself that it is engaged and feeding in all sections.

Cartridge loading cameras eliminate sprocket wheels, but the loading must be checked when inserting the film in the lens gate. Never load a camera in bright sunlight Always go indoors when it is possible or in deep shade, as the tiniest pencil of light can ruin two good shots The film loops in the camera and the projector are necessary as the sprocket wheels feed the film at a uniform rate while the claw action is intermittent

Loading Cameras

A loop of free film relieves any tension between the sprocket wheel and claw, but it should not be so large that the film slops against the side of the camera Some cameras do not employ the sprocket drive but insert a film splitter which replaces the loops

The loading of these cameras is simplified as only the claw action must be engaged After the loading of the camera, it is necessary to run the mechanism to pull off enough film which was fogged in the operation By the second hand of your watch, run the camera for eight seconds.

If the film was not unduly fogged while threading it in the camera, this short running will feed in the unexposed film without too much waste Some cameras have indicators on the footage dial to show how much film should be run off after loading Their instruction books will inform you how to use it

In operating the camera it is a good habit to rewind the spring after each shot, although the springs in the new cameras will run 6 to 20 feet at one full winding. Then there is no danger of the camera stopping half-way on a good shot that may require long footage.

Check the diaphragm opening each time because you can inadvertently open or close the iris by accident On cameras equipped with fast lenses, the lens is mounted in a focusing barrel which needs your attention constantly. The focus of each shot must be checked, unless you are shooting distant subjects constantly

Reversing Spools

When using large aperatures, or close-ups shots, each shot requires critical focusing Measure or carefully estimate the distance from the camera to the subject and turn the focusing collar until the footage mark is at the index line.

After the film has been exposed, it is rethreaded in the camera, reversing the spools to expose the second half of it. As the film is 16mm. wide, only 8mm. of it was exposed on the first run, and by reversing the spools we take the second run, exposing the other 8mm. width.

Thus 25 feet of 16mm width film gives us 50 feet of 8mm width when the processing plant has slit the film down the center line and spliced each strip

Corresponding values of both scales

f	4	4 5	5 6	6 3	8	11	16	22	32	45
	1	1 26	2	2 5	4	8	16	32	64	128

Motion pictures, as we know them today, are possible because of a defect in the human eye Our eye continues to register an object for a short period of time after the object has been removed This is called "persistence of vision," and is the phenomena which gives us the illusion of motion in pictures The duration of our sight is approximately one-tenth of a second, so that, if a group of similar pictures were flashed to our eye, each picture having an object slightly changing its position, the eye could not segregate each picture fast enough, and the object appears to move

Motion pictures do not move. In reality, they are a series of motionless pictures, but with slight changes in each picture By projecting these pictures at a speed greater than one-tenth of a second the eye does not see each picture individually, but the differences in each picture is transferred to the brain as a movement from one spot to another

Depth of Focus Scale for 8mm Lens—One half inch Focal Length
(Don't use this table if using an auxiliary lens on camera)

STANDARD LENS SCALE

Distance of Subject	Distance of Critical Sharpness													
	f 1.9		f 2.8		f 3.5		f 5.6		f 8		f 11		f 16	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Inf	22'6"	Inf	15'3"	Inf	12'2"	Inf	7'7"	Inf	5'4"	Inf	3'11"	Inf	2'8"	Inf
50'	15'6"	Inf	11'8"	Inf	9'10"	Inf	6'7"	Inf	4'10"	Inf	3'7"	Inf	2'6"	Inf
25'	11'10"	Inf	9'6"	Inf	8'2"	Inf	5'10"	Inf	4'7"	Inf	3'4"	Inf	2'5"	Inf
15'	9'0"	45'0"	7'7"	Inf	6'9"	Inf	5'1"	Inf	4'2"	Inf	3'1"	Inf	2'3"	Inf
10'	6'10"	18'0"	6'0"	29'0"	5'6"	56'0"	4'4"	Inf	3'5"	Inf	2'10"	Inf	2'1"	Inf
8'	5'11"	12'5"	5'3"	16'10"	4'10"	23'2"	3'11"	Inf	3'2"	Inf	2'7"	Inf	2'0"	Inf
6'	4'9"	8'2"	4'4"	9'11"	4'0"	11'10"	3'4"	28'6"	2'10"	Inf	2'4"	Inf	1'10"	Inf
4'	3'5"	4'10"	3'2"	5'5"	3'0"	5'11"	2'7"	8'5"	2'3"	15'11"	1'11"	Inf	1'7"	Inf
3'	2'8"	3'6"	2'6"	3'9"	2'5"	4'0"	2'2"	4'11"	1'11"	16'0"	1'8"	18'3"	1'5"	Inf
2'	1'10"	2'2"	1'9"	2'4"	1'9"	2'5"	1'7"	2'9"	1'6"	3'2"	1'4"	4'2"	1'2"	8'0"

together After the film is completely exposed, unload it in subdued light and replace in the original package for processing.

Eight millimeter lenses, being of short focal length, have a deep depth of focus. The depth of focus of a lens is the distance in front of and behind an object that remains sharp at a certain opening, when the lens is focused on the object If a girl is four feet from the camera, and the lens is focused at four feet, at an opening of f 5.6, she would be able to advance to the camera up to 2 feet 7 inches or step back from the camera to 8 feet 5 inches without being out of focus

This gives a freedom of movement without affecting the focus, which is very advantageous in motion picture work This depth of focus is very deep on fixed focused cameras, as all objects from six feet to infinity are in critical focus at the largest diaphragm opening. As the diaphragm is closed down to smaller openings, the depth of focus increases

Example—Girl is four feet from camera. Lens is focused at 4 feet at f1.9 Closest distance to camera for sharpness, 3 feet 5 inches; farthest, 4 feet 10 inches At f3.5, closest distance to camera for sharpness, 3 feet, farthest, 5 feet 11 inches; At f11, closest distance to camera for sharpness, 1 foot 11 inches; farthest, infinity

Example: Subject focused upon is 10 feet from lens At f2.8 the minimum or closest distance of sharpness is 6 feet and the maximum distance from the lens for sharpness is 29 feet. The same subject shot at an opening of f8 would have a minimum distance of 3 feet 5 inches and a maximum to infinity This table is important for use in titling where zoom titles are desired in sharp focus at the start and finish of the zoom.

The telephoto lens (38mm.) lens has less depth of focus, due to its longer focal length. The freedom of the subject's movement is lessened to a greater extent, and the lens focusing must be more accurate than with the standard ½-inch lens.

Unless you are shooting at small apertures or distant subjects, the distance of a few inches will throw the subject

(Continued on Page 474)

TELEPHOTO LENS SCALE

Distance of Subject	Distance of Critical Sharpness											
	f 4.5		f 5.6		f 8		f 11		f 16		f 22	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Inf	83'0"	Inf	67'0"	Inf	47'0"	Inf	34'0"	Inf	23'0"	Inf	17'0"	Inf
50'	31'0"	126'0"	29'0"	197'0"	24'0"	Inf	20'0"	Inf	16'0"	Inf	13'0"	Inf
25'	19'0"	36'0"	18'0"	40'0"	16'0"	54'0"	14'0"	64'0"	12'0"	Inf	10'0"	Inf
15'	12'8"	18'4"	12'3"	19'4"	11'5"	22'0"	10'5"	26'10"	9'2"	42'0"	8'0"	127'0"
12'	10'6"	14'1"	10'2"	14'7"	9'7"	16'2"	8'10"	18'6"	7'11"	24'7"	7'0"	41'0"
10'	8'11"	11'4"	8'8"	11'9"	8'3"	12'8"	7'9"	14'2"	7'0"	17'6"	6'4"	24'4"
8'	7'4"	8'10"	7'2"	9'1"	6'10"	9'8"	6'6"	10'5"	6'0"	12'2"	5'5"	15'2"
6'	5'7"	6'6"	5'6"	6'7"	5'4"	6'10"	5'2"	7'3"	4'9"	8'11"	4'5"	9'3"

Practical Amateur to Beginners: Lens Equipment Characteristics

By JAMES A. SHERLOCK

Vice President Australian Amateur Cine Society

PART II

JAMES E. MAC LANE

Color Photography

337 Shadeland Avenue
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Motion Picture Production Illustration
Portraiture

I am inclosing my check for $2.50 in payment of one year's subscription to the American Cinematographer. I think it represents about the best buy for the money in the entire bargain-packed field of motion picture and photographic literature.

The articles themselves, and the famous authors who write them, are indispensable sources of information to those of us in this business who are, as yet, neither articulate nor famous.

Your advertisers, some of whom I have patronized, must be quite thankful that one magazine carries their messages to the field so well and so wisely.

JAMES E. MacLANE

HYPERFOCAL DISTANCES

When any lens is set at infinity it is sometimes important to know the minimum distance at which sharp focus is obtained at a certain aperture. This minimum distance is known as "hyperfocal distance," and the following table can be used for all makes of lenses and might be carried in the camera case ready for reference.

It was compiled for both 16mm. and 8mm. cameras and is expressed in feet, based upon a circle of confusion of .001 inch diameter, which makes the table suitable for very critical work. For average work with 16mm. film a .002-inch circle of confusion can be used. This would halve every hyperfocal distance.

For example. The "critical" hyperfocal distance for the 15mm. lens at an aperture of f3.5 is 8 feet, but for average work with the lens focused on an object infinitely far away and the aperture used at f3.5, all objects from 4 feet away to infinity will be sufficiently sharp.

CIRCLE OF CONFUSION

The circle of confusion is not really a circle, but the diameter of a circle. It is what theoretically should be the point where all transmitted rays of light entering the lens converge, but because different colors vary in their wave length they do not converge at one point but come together at different points, thus forming a "circle of error" recognized as the "CIRCLE OF CONFUSION."

Manufacturers of most cine lenses claim their sharpness to be a circle of .001-inch for critical work, and .002-inch for general work, and, small as it is, it must not be left out of our calculations, otherwise the fault would be noticed on the screen when the picture was projected.

DEPTH OF FIELD

When a lens is focused at a given distance, THEORETICALLY only objects at that distance will be in critical focus, but PRACTICALLY the eye cannot perceive the slight indistinctness of some objects both near and farther away. For this reason, a lens is known to have a certain "depth of field," that is, it produces sharp pictures over a certain depth of planes. As the lens diaphragm is stopped down, the area of the glass surface becomes smaller and the depth of field increases.

Depth of field can be calculated by formulas, but it has been the writer's experience that amateurs, even if they can work out equations, rarely do so if they can refer to a table. For this reason a set of depth of field tables for popular 16mm. and 8mm. lenses follow, which can be cut out of this magazine and carried in the camera case.

It should be noted that small apertures widen the planes between which all objects are in critical focus.

TABLE OF HYPERFOCAL DISTANCES

F Value

Lens Focal Length	F 1.4	F 1.5	F 1.6	F 2.0	F 2.5	F 3	F 3.5	F 4.0	F 4.5	F 5.0	F 5.6	F 6.3	F 8	F 11	F 16	F 22	F 32
12 mm	143 ft	131 ft	123 ft	10	8			5	4	3½	3	2½	1¾				
15 mm				14	11	10	8	7	6	5½	5	4½	3½	2½	1¾		
20 mm				25	20	17	14	12½	11	9¾	8½	7	5½	4	2¾		
1-inch	500 ft	455 ft	416 ft	357	286	238	204	179	159	143	130	113	89	65	45	33	22
1½ inch	1125	1025	937	804	643	536	459	402	357	321	292	255	201	146	100	73	50
2 inch	2000	1820	1666	1429	1143	952	816	714	635	571	519	453	357	260	179	130	89
3 inch	4500	4100	3750	3214	2571	2143	1837	1607	1429	1286	1169	1020	804	585	402	293	201
4 inch	8000	7280	6666	5714	4571	3809	3265	2857	2540	2286	2078	1814	1429	1040	714	520	357
6 inch	18000	16380	15000	12857	10286	8571	7347	6428	5714	5143	4675	4080	3214	2340	1607	1170	804

CRITICAL DEPTH OF FIELD FORMULA

By focusing a lens on the main point of interest in a scene, the picture will be entirely satisfactory for about 90 percent of amateur cinesmiths. For the other 10 percent who wish to figure the critical depth of field for any lens under various conditions of stops and object distances, the following formula is added:

h = Hyperfocal distance
d = Distance from camera

$$\text{e.g.} \quad \frac{h \times d}{h + d} = \text{Near sharp focus}$$

$$\frac{h \times d}{h - d} = \text{Far sharp focus}$$

With a 1-inch focusing mount lens, we want to focus upon an object 4 feet away and the exposure meter indicates a stop of f8. Now we refer to the hyperfocal table and learn that the hyperfocal distance from that lens and stop is 10¾ feet.

$$h = 10\tfrac{3}{4} \qquad d = 4$$

$$\frac{10\tfrac{3}{4} \times 4}{10\tfrac{3}{4} + 4} = \frac{43}{14\tfrac{3}{4}} = 2.9 \text{ feet near sharp focus}$$

$$\frac{10\tfrac{3}{4} \times 4}{10\tfrac{3}{4} - 4} = \frac{43}{6\tfrac{3}{4}} = 6.37 \text{ feet far sharp focus}$$

Thus with a 1-inch lens set at f8 and focused at 4 feet all objects from 2.9 feet to 6.37 feet are in critical focus.

APPROXIMATE PICTURE AREAS COVERED BY 8mm. & 16mm. LENSES

For greater distances than 9 feet, simply move decimal point

For example Area width for 1-inch lens on a 16mm camera is 2.26 feet at a distance of 6 feet. At 60 feet it would be 22.6 feet; at 600 feet it would be 226 feet

These lenses when used for this purpose have the ability to make the eyes and cheekbones appear wider apart and the forehead higher and more receding than normal On some scenes these lenses can be used to overcome the necessity of panoraming, but suffer from the same defect as the normal lens with most still cameras, viz., dwarfed distant objects

For the T H ½-inch f2.5 lens (8mm) the T-H 1-inch f2.7 focus lens, and for the B&H Lumax 1-inch f1.9 lens, a special highly corrected lens attachment known as the "Hyper-Cinor lens attachment" is available. This accessory makes these lenses capable of doubling their area from a given camera position, and includes provision for focusing Tests prove that its definition and focus remain clear to the edges of the picture Matched

This accessory shields the lens from light which may cause either stray illumination in the camera or lens flare The effect of lens flare is illustrated when one sees light rings move across the screen. These are due to the main source of light shining on the front element of the lens, causing a multiple reflection in other elements of the lens.

It follows that the larger the glass surface of a lens, the more likely it is to collect stray light, especially if the lens is facing in the direction of the main source of light A well designed hood diminishes this danger

"FAST" 1-INCH LENS

The 1-inch cine lenses having an aperture less than f2.5 are recognized as fast lenses. They have two pairs of glasses separated by an air space in which an iris diaphragm is fitted Their large glass surfaces pass up to three times the amount of light transmitted by the f2.5 lens, but strict attention must be given to focusing when their diaphragm is wide open.

Stopped down, they give the same results as a slower lens, but, due to their large glass surfaces, are liable to collect unwanted stray light rays when photographing a back-lighted subject. Their speed makes them suitable for interiors, poorly lit subjects, or night photography.

f3.5 1-INCH FIXED FOCUS LENS

When filming exteriors, it is rarely that a faster lens than an f3.5 is required, and a 1-inch fixed focus f3.5 lens is the ideal lens for a beginner to use. Certainly it has its limitations, but so has every lens It is simple to use, because there is only the aperture to set, and due to this fact it is very useful when making a travel or holiday film, as many times a chance shot will present

Lens Focal Length

8 mm Camera	16 mm Camera	Plane	Distance from Camera in Feet								
			1	2	3	4	5	6	7	8	9
	15 mm	Horizontal	64	1 [illegible]	1 91	[illegible] 5	3 18	3 84	4 41	5 10	5 73
		Vertical	47	95	1 42	1 90	2 37	2 85	3 32	3 80	4 27
12½ mm	1"	Horizontal	48	96	1 44	1 91	2 39	2 87	3 35	3 83	4 31
		Vertical	38	76	1 14	1 52	1 90	2 28	2 66	3 04	3 42
1"	2"	Horizontal	19	38	56	75	94	1 13	1 32	1 50	1 69
		Vertical	14	28	4	56	70	84	98	1 12	1 26
1½"	3"	Horizontal	13	25	38	50	63	75	88	1 00	1 13
		Vertical	09	19	28	37	47	56	65	75	84
	4"	Horizontal	09	19	28	38	47	56	66	75	85
		Vertical	07	14	21	28	35	42	49	56	63
	5"	Horizontal	08	13	19	25	31	38	44	50	56
		Vertical	05	09	14	19	24	28	33	37	42

WIDE ANGLE LENS

Wide angle lenses are used on cine cameras in order to obtain a reasonably wide field of view.

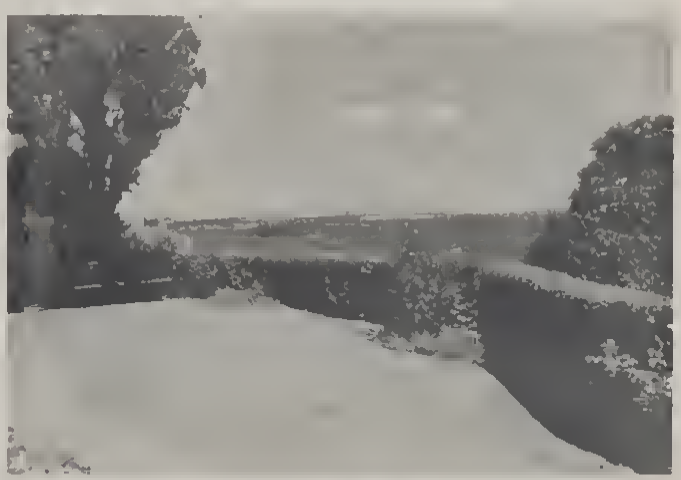
When the amateur is considering the purchase of extra lens equipment, he would be well advised to examine the capabilities of a wide angle lens They are not manufactured for 8mm cameras, but are available for 16mm cameras The 15mm. lens takes in an area 40 percent wider and 40 percent higher than the regular 1-inch lens, and is, therefore, useful when shooting in cramped quarters. The speed of wide angle lenses are fairly fast (f2.5 or f2.7) and in addition to their ability to include a large area from a relatively close camera position, these lenses have a greater depth of field than the normal 1-inch lens, and, therefore, the ability to bring into focus more additional planes

A scene such as an interior when being shot might necessitate sharp focus at distances varying from 3 feet to 12 feet from the camera with the lens wide open When the amateur has such a problem, the wide angle lens will solve it. Professional cinematographers use wide angle lenses at times to accentuate distorted or grotesque faces in an extremely close closeup

viewfinder lenses for use with this wide angle objective are supplied.

LENS HOODS

Few serious amateurs realize the benefit of a properly constructed lens hood



A wide angle lens has the defect of making distant objects appear dwarfed

[illegible] appear [illegible] perspective.

A long (two inch) focal [illegible] produces larger images of [illegible]

Telephoto lenses are often used to bring backgrounds closer to the foreground.

itself that has to be taken immediately or not at all

The amateur cinesmith should not be under the impression that the f3.5 fixed focus lens is a piece of cine equipment introduced because of its cheapness It is an excellent lens capable of producing high-class pictures

LONG FOCUS 2-INCH LENS

The f3 5 2-inch lens is known as a long focus lens Its main object is to provide larger images of given objects It is constructed of only three glass elements, and in comparison with the faster 1-inch lens is of simple construction

It is ideal for portraiture, has improved perspective, and renders a close-up of a head in almost stereoscopic bold relief It can also be used on landscapes and has a lack of depth of field which is sometimes a valuable feature

TELEPHOTO LENSES

In practice the main characteristic of these lenses is that they have the power of magnification For example the 3-inch lens has a magnifying factor three times greater than the 1-inch lens, but because of their greater focal length, telephoto lenses are not as fast as 1-inch lenses. They should not be used without a tripod, as the slightest movement in the camera is magnified

Telephoto lenses are often used by professionals to bring backgrounds closer to a foreground This can only be done by using a small aperture, because as lenses increase in focal length their depth of field diminishes and unless a small aperture is used the background might be out of focus

By the same rule the lack of depth of field in a lens may be a valuable asset. For example, backgrounds sometimes contain unwanted detail which can easily be thrown out of focus with a telephoto lens, that is, if there is sufficient room to move the camera far enough back from the subject, to embrace sufficient field of view

It is at this point that a most controversial question in relation to telephoto lenses is mentioned, viz —Does a telephoto lens need the same lens opening for a given scene as a normal lens?

The writer's experience is that high-grade lenses of different focal lengths set at the safe f stop will transmit the same amount of light to the film, but generally telephoto lenses are used by amateurs to photograph objects at a considerable distance from the camera, and intervening mist or haze between the camera and the object causes a scatter-

(Continued on Page 476)

Adaptability

● The light from "National" Studio and High Intensity Carbons is as adaptable as the artist's pencils. It allows the cinematographer to use his craftsmanship to the best advantage in both color and black and white productions.

The pure white light from these carbon arc sources adapts itself admirably to all types of emulsions. Hard effects may be obtained when desired by using the concentrated brilliance of the arc to produce sharply outlined shadows. With moderate diffusion, and with the minimum use of filters, the arc, due to its even balance of colors, closely approximating daylight, will give without loss of speed a softness of tone that cannot be equaled by other light sources lacking these qualities.

The cool, quiet and efficient operation of modern carbon arc equipment adds materially to the effectiveness and economy of studio illumination.

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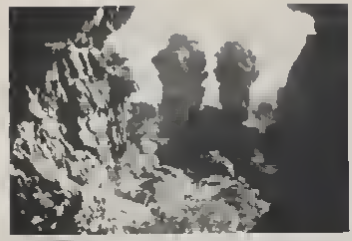

TUCSON TRAILS:

How Real Travelogue Was Made

By Chas. W. Herbert, A.S.C.

TUCSON TRAILS, recently released by Universal as one of its "Going Places" travelogue reels, is an outstanding example of how a travelogue can be whipped together once a practical workable theme is found.

The editor wanted as much material as possible from the Southwest. Soon after I got into the field it was apparent that there were two definite obstacles to overcome.

First, as I was to work there in the winter, more than half of the Southwest was barred from suitable coverage because it was really winter there.

Second, the southern portion was in a large measure desert and desert mountain. The very geographical division of the region into desert has made its climate the most even and ideal to be found anywhere in the United States during the winter months, both for recreation and moviemaking.

Tucson, which shares the Southwest's privilege of having this ideal winter climate, has long been a health and recreational center.

Its development during the past ten years has been astonishing, so it seemed logical to use Tucson as the hub of one of our reels. The

Wonderland of rocks. Fort Huachuachua.

evenness of the climate and the similarity of the desert landscape made it difficult to locate enough features with variety to build a complete reel right in Tucson.

Tucson Is Picked

After surveying all of the possibilities and finding out just how tourists spent their time, the idea of Tucson Trails was born. Tucson was the logical headquarters from which roads paralleling the old trails let out southward to places where there was a variety of interest.

Using Tucson as the hub, a series of scenic and artistic shots of buildings were made for an introduction. By selecting a long shot on the side of the mountain with the graceful arms of a giant cactus in the foreground, framing a distant shot of the city backdropped with mountains, all of the atmosphere of Tucson was crammed into the opening shot

In selecting buildings to shoot, only those which had southwestern architecture were used. Some human interest closeups of tourists lounging around the lovely hotels, playing chess, shuffle board, and at one of the swimming pools rounded out the introduction.

Tucson boasts with pride of its great open spaces and pure air, so the city is spread out with plenty of space all around her houses, public buildings and institutions. This is a great aid to the cameraman looking for a location from which to make a general view of a large building There are also many hotels, schools and health centers on roads which lead out to the suburbs.

Some of the introductory scenes were made around El Conquistador Hotel, so we concentrated on the Arizona Inn for a more intimate sequence of tourist activity. The management kindly arranged a garden party, where tourists in gay dress seated at tables, watched a strange, primitive dance by real Indians from a nearby reservation

Composition

Using cactus for a foreground frame, a full general view of the dancers entering the garden was set off perfectly by the distant mountains towering above the hotel. Numerous angle shots, in-

University of Arizona class in cactus forest

Tucson.

cluding dancers and tourists, followed logically with intimate closeups of the dancers and the tourists watching, and full closeups of the crude instruments completed this easy sequence.

As many different set-ups required breaking the dance and music routine, it was necessary to be careful to maintain the same tempo in the dance from general view to closeup.

In addition to the splendid University of Arizona there are many private boys' and girls' schools that feature outdoor activity. We selected the Southern Arizona School for Boys, where an unusual sequence of school routine was possible. The opening shot showed the class sprawled out in carefree positions on the well cropped grass lawn between the main buildings.

It was study period and some closeups with boots in the foreground fit in nicely. Then a forceful closeup of the teacher ringing a crude bell to signal a class change with a cutback to the general view as the boys quickly ran off the set

Next in logical order came the surprising general view of the whole class of forty boys in the corral mounting their horses. The camera was then set up in the main building looking through an enormous picture window with giant cactus and mountains in its frame For action the boys trotted past to field class.

Several fast moving shots of the boys galloping their horses filled in nicely and the closing shots showed the boys engaged in archaeological excavation, uncovering an ancient Indian village. Closeups of the professor helping the boys piece together bits of pottery completed the sequence

Beating the Obvious

One of the tourist attractions is the giant cactus forest recently created into the Sahuaro National Monument. Although the giant cactus actually forms a forest and there are many strange formations, this feature was impossible without action.

Tourists just walking and looking at the cactus was too commonplace and monotonous. The University of Arizona botany class made periodical excursions to study the strange giant cactus peculiar to this region, so I arranged a special trip for our film.

They had a very snappy looking bus which carried the class through the opening shots as it wound its way along the road through the forest. A fantastic cactus with sprawling arms framed the shot as the bus came to a standstill and the class got out.

One scene was exposed as the professor made his way through the forest followed by the class Then a carefully arranged shot showed the class sitting on the ground with sketchbooks around a magnificent specimen as the teacher lectured to them.

Closeups of the students sketching the sahuaro cactus gave variety here. Then a good series of shots with surprising action followed as the teacher took a large saw and cut off the top from a small upright cactus.

Then he explained how the accordion shape of the cactus allows it to expand and contract as it absorbs water in the wet season and uses it up during the dry season. A convincing closeup was available here by looking down on the sawed-off portions while the teacher traced its edges with a pencil

We now had an introduction and three sequences—about half enough material for a complete reel so we went off on some Tucson trails in search of other features

Nogales Popular

Sixty miles away, almost due south, are the twin cities of Nogales on the Mexican border. Although Nogales, Sonora, is drab and uninteresting compared to the more picturesque region farther south in Mexico, there is a pronounced friendly feeling between the United States and Mexico here

All tourists who come to the Southwest want to go to Nogales to shop, eat game food and absorb a bit of night life. It was plain to see that this was just the sequence to make, so we started with a general view, putting the camera astride the International Boundary Fence which goes right down the street—half in Mexico and half in the United States.

Then we moved down to the gate and photographed a group of tourists passing through to the Mexican side. Several scenes of tourists walking down the street and looking at some of the typical buildings were made. An effective shot showed two tourists looking at a booklet the cover of which, next to the camera, read "What to See in Mexico"

A railroad crossing sign in Spanish in the left foreground helped the composition Appropriate action was arranged which showed the tourists looking at the book then pointing off the scene and moving out of the picture The following scene was made so that the backs of the tourists practically filled the screen and as they walked away to continue the action in the first scene a full view of the Nogales Government House was disclosed

We were given permission by one of the Mexican shops to set up lights inside. A shot was made as some tourists came down the street, paused to look in the window, then entered.

Interiors were made as an attractive sales girl in costume waited on the tourists. The camera was again moved outside to get the tourists as they came out loaded with big Mexican hats, colorful baskets, serapes and what-nots.

The Cavern is by far the best known and most picturesque restaurant in Nogales, so we arranged with the management to shoot some scenes inside while tourists watched the floor show and also while they danced. For these shots the Nogales Electric Company kindly installed special wires for our lights.

Back at the International Boundary we showed the tourists crossing again to the American side and having their purchases inspected by the United States Customs agents.

Unusual Army Post

With Nogales tucked away in cans we drove over to Fort Huachuca, which is the tourist attraction featured by Bisbee, though easily reached from Tucson also. Here we found a most unusual army post nestled down between the mountains within striking distance of the border The Twenty-Fifth Infantry, all negro regiment, is stationed there, and with them the only detachment of real Indian Scouts assigned to active duty with the army.

Just a regimental review would be too commonplace and lacking in angles. We couldn't very well have the Indians dressed up in regalia without an excuse, as it would be against regulations for them to go on scout duty in native dress today. But Indians without feathers would certainly be drab so we concocted a sequence which showed them in traditional costume coming up front and center to receive a present of a spear and shield from the

colonel as a token of appreciation for the faithful service which these scouts had given

Then, as a part of a field maneuver, a re-enactment was made showing the Indian scouts around a field message center and racing across the mountains to an observation post, while the regiment in field kits moved up for action. This plan met with the approval of the commanding officer and gave us a very colorful sequence with action plus.

The end of the reel was now in sight but one more good sequence was still needed. I had heard of the Wonderland of Rocks in the Chiricahua National Monument, and this seemed to be a sure fire subject. It offered the genuine scenic aspect that all travelogues need

Put On Party

The Chamber of Commerce in Tucson arranged for us to go to the Riggs Ranch at the entrance to the Monument. The Riggs family had originally discovered the Wonderland of Rocks and had done much to popularize it as a tourist attraction. They gladly offered horses and made up a party to furnish action in the Wonderland.

By going on horseback we reached the most impressive rock formation region and were able to shoot many fantastic rocks not seen by the average tourist who only goes on the automobile road. Several scenes were made of Cochise's Head, Punch and Judy, The Duck, Balanced Rock, Queen Anne's Head and other strange formations.

The usual procedure was followed here by selecting effective locations that featured the rocks and then letting the tourists wandering through furnish the action. The Wonderland of Rocks was certainly worth while and completed Tucson Trails nicely.

All through the making of this reel we depended upon the various Chambers of Commerce to make it possible for us to photograph the attractions that each was particularly interested in. We were also indebted to the Sunshine Climate Club of Tucson for their generous, understanding co-operation. It is quite obvious that a travel reel cannot be made efficiently without co-operation from those interested in promoting the region. One of the smartest things a cameraman can do is to work in complete accord with those who help him.

Eastman Shows Speedlamp at Tour of Seventeen Cities

Demonstrations of the new Eastman high-speed 1/30,000-second flash lamp —the Kodatron Speedlamp—will be a feature of the 1940 Kodak Exhibit's tour of seventeen leading western and southwestern cities.

The Speedlamp will be shown in operation, and its action-stopping power will be demonstrated along with an explanation of how it works. The demonstration will be a feature of each evening show at the exhibit, these evening shows also including selections from the famous Eastman "Cavalcade of Color," full color movies of the Golden Gate Exposition and the New York Fair, and a discussion session on photography.

Other features of the exhibit—open each day of its schedule from 11 a. m. to 10 p. m.—are a superb print salon, panels of color prints and transparencies, practical displays dealing with technique, darkroom and equipment exhibits, and panels of local honor prints which are being organized in each exhibit city.

Exhibit schedule as complete to the date of this announcement is as follows, all dates being inclusive

City Dates Hotel

Portland, Oct. 2, 3, 4, Multnomah Hotel.
Sacramento, Oct. 9, 10, Municipal Auditorium
Oakland, Oct. 15, 16, 17, Scottish Rite Temple.
San Francisco, Oct. 20, 21, 22, Palace Hotel.
Fresno, Oct. 24, 25, Hotel Californian
Los Angeles, Oct. 29, Nov. 1, Biltmore Hotel
Hollywood, Nov. 3, 4 Hollywood Roosevelt Hotel
Long Beach, Nov. 8, 9, Hilton Hotel.
San Diego, Nov. 13, 14, U. S. Grant Hotel.
San Antonio, Nov. 21, 22, The Gunter
Houston, Nov. 26, 27, The Rice Hotel
Fort Worth, Dec. 1, 2, Texas Hotel

Showings are also being arranged in Dallas, Oklahoma City and Tulsa.

Fred Young Reports Home From ERPI in Singapore

Fred Young, for the last three years manager of the ERPI office in Singapore, British Malaya, returned to New York a few weeks ago and has spent the last few weeks outlining Far Eastern business conditions to ERPI executives. He has also visited factories of Western Electric as well as those of manufacturers for whom ERPI distributes to familiarize himself with new products. Young's comments on conditions in the Netherlands Indies, part of his territory, are especially interesting.

Immediately after the German invasion of Holland, business in the Dutch colonies in the Far East seemed paralyzed, but it was but a matter of days before a complete readjustment was made and today the motto seems to be "business as usual." The chief relaxation from the strain of the international situation, Young says, seems to be the motion pictures.

Agfa Announces Change

Agfa Ansco announced effective August 1 the following price reductions on 35mm negative film superpan supreme, ultra speed pan and finopan, from 4 cents per foot to 3½ cents, infra red, from 5 to 4½ cents per foot, on positive black and white nitrate, from $1 to 85 cents per hundred feet; black and white safety, from $1.40 to $1.25 per hundred feet.

HONOR RUDOLPH MATE IN PHOTOGRAPHIC VOTE

RUDOLPH MATE, A.S.C., won the top photographic award in the Hollywood Reporter's poll for August releases. The picture was Walter Wanger's "Foreign Correspondent." Alfred Hitchcock was given the honors for his direction of the same picture, while the subject was named the best picture of the month. Albert Basserman for his work in the same picture was voted the best supporting actor. On the photographic award Arthur Miller, A.S.C., was second for Twentieth Century-Fox's "Brigham Young" and Hal Rosson, A.S.C., was third for MGM's "Boom Town."

John Lee Mahin was voted the best screen play on "Boom Town," while MGM's "Dr. Kildare Goes Home" took the honors for the best general feature. Martha Scott in Columbia's "Howard's of Virginia" was voted the best actress. Una O'Connor in Columbia's "He Stayed for Breakfast" was declared the best supporting actress. Gurt Bois for the same picture was cited the best incident performer.

Dean Jagger was voted the best actor for his part in "Brigham Young." Victor Young's musical score for Paramount's "Rhythm on the River" was declared the best, while the theme song of the same picture also was voted first.

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Kodascope Model G is the new ruling favorite among 16 mm projectors. It's so easy to use, so "professional" in its quiet efficiency. At its regular price of $100, without lens or lamp, it is an excellent value. Under this combination offer, the value is even higher.

Of the six lenses available for Model G, the 2-inch *f*/1.6 is undoubtedly the favorite average-use lens. It gives you a screen image 26" by 34" at 15 feet, 42" by 56" at 25 feet.

And the 750-watt lamp is, of course, rich in brilliance. You need never fear that your screened movies will have that anemic, washed-out look; they'll be full-bodied, vivid.

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Photofloods Mean Much to the Photographer

By CHARLES W. HERBERT, A.S.C.

PRACTICALLY all industries have started with some untried methods and materials. Research and application have brought about short cuts and improvements of great value and convenience to the industry itself as well as those whose labors actuate the industry.

Essential improvements have been the result of a known need more often than through accident. Probably no industry has benefited more continually through research than motion picture productions.

As film is the medium on which enormous effort and expense is condensed, early day improvements centered on raw stock. First a stock was needed that gave a more pleasing and truer blending of the tonal values of the subject. The replacement of orthochromatic film by panchromatic stock accomplished this in one revolutionary step.

Then there was the need for an emulsion that would enable the making of a duplicate negative with the same quality as the original. This need was paramount to prevent the entire loss of production efforts through fires which destroyed the original negative as well as a need to save wear and tear on the original negative as hundreds of prints were made from it. The now widely used duplicating stock for lavender prints solved this problem efficiently.

Background Projection Grows

Next came increasing demands for a suitable method and raw stock for background projection work, to save the enormous expense of moving entire production units to the far corners of the earth on exterior locations.

Vast sets were and are still being built in Hollywood, duplicating locations from Tibet to the heart of Africa. Yet background negative has made it possible for a camera crew with some doubles to journey to distant places, make general views and long shots in which the doubles appear and also background shots without the characters.

These background shots are developed and printed, then projected on an enormous screen in the studio while your favorite actors fill in the dramatic foreground action.

With the coming of sound and the narrowing down of the field of operation to sound-proofed areas inside studios, the need for a faster film has increased. This demand has been solved adequately by all the major film stock producers with their new fast emulsions.

Hand in hand with the development of faster film emulsions has been the progress in interior lighting. Sound takes made the old noisy Klieg lights obsolete in one sweeping blow. Overnight, lighting had to be done with incandescent bulbs.

The life, power and reflectors of these bulbs have been consistently improved. While the photo-flood bulb was originally hailed as a boon to the amateur, it has since become a valuable asset to productions, commercials and newsreels.

Photofloods Change Much

Not long ago a newsreel man on assignment to cover a personality, or any small object that belonged inside, moved his subject outside into daylight or refused to make it. Now he can, in a pinch, have a few photoflood bulbs in his kit, remove the average house lighting bulbs, substitute his photofloods and shoot.

Commercial production units assigned to cover great industries with large floor spaces where important processes took place had to light the area with powerful spots. In most cases this was a colossal job requiring a large crew, much time and entailed great expense.

Usually the wiring from high power lines and specially installed transformers had to be put in at night while the factory was idle. Lighting was an important item to figure in production costs when bidding on the job and quite often a commercial job was abandoned because the expense was too high.

But now with the photoflood to rely on, a commercial can be made in any factory room, no matter how large, as long as it is already wired to give efficient

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Scene from Tobacconland, U. S. A., from March of Time, demonstrating advantage of placing photofloods overhead. All photos by Herbert

Frame Your Titles to Put Life in Pictures

By BILL SEINEKE, JR.

PLEASED indeed is the amateur cinematographer of whose work the comment is made: "Weren't those pictures good!" But the pleasure possesses added zest when he hears: "And weren't the titles clever!"

Titles which elicit that kind of criticism must be good, and usually are the products of painstaking hard work and ingenuity.

This man expects praise of his picture; he thoroughly deserves it. The film has been made from a carefully planned shooting script. Exposures have been metered and weighed in the light of his experienced judgment. The camera angles are unique and diversified: they violate no rules. He has edited it so that no sequence is too long; from start to finish it holds its spectators in eager anticipation of reels to come.

AND the picture has been titled. An appropriate, well made introductory title is followed by substitles properly spaced, economically and tastefully worded.

Titles Essential

Pictures are made to entertain, to educate and to provoke thought. Most amateurs aim at entertainment, a few specialize in technological fields; infrequently one undertakes the presentation of problems.

With any or all of these purposes in mind, it may be emphatically declared that titles are essential to the living quality of any film. They are the voices of silent movies. No picture can stand alone upon its photographic merit as long as its critics and judges are human beings.

Because human being . . . you and I . . . ask questions. According to the journalism school's formula for a news story, we ask them: Who, what, where, when, how and why?

In the field of amateur cinematography, only titles and subtitles can answer them.

Untitled films made by amateurs fall into three categories.

1. The pictures he made when he started out and others he considers too poor to warrant titling.

2. Experimental films, begun with a red hot idea which has gone lukewarm.

3. Those he hasn't gotten around to titling.

Pictures made with any purpose whatsoever deserve to be titled. Is there a film in one of the three foregoing classes which its maker shot absolutely aimlessly?

Titles Supply Life

He may have been acquainting himself with his camera's mechanism at the very outset. A lot of blank footage sprinkled with flashes of light and darkness is hardly included here.

This brief is for that part of every cinematographer's library which, high water having come and gone, is still untitled. It is for those innumerable glimpses of rare scenic beauty recorded by his camera in America's parks and playgrounds, for the never to be recaptured candid peeks at family and friends which lie, dusty, unidentified and unnamed on a closet shelf.

Time-stamped for oblivion, their very inertia is a challenge to give them life that only titles can supply.

It is well known that average folk like to watch motion pictures in the same degree that movicam hobbyists like to project them. A reel or two of good pictures nearly always evokes a cry for more such.

This is where the average amateur slips. There isn't more. Well, there is, but it's old and untitled. Nevertheless he hauls out the old stuff and ruins what would have been a pleasant evening.

He is too often guilty of boring his friends with such films while he conducts a Pete Smith type of running commentary which he fancies is enormously funny, amply explanatory to a group of people unfamiliar with its subjects or subject matter.

In Interest of Brevity

He attempts a job orally in a thousand words which titles might have handled in an even hundred, and more efficiently. Actually, he has been traitorous to old friends, the films which helped him to become the skilled moviemaker he is. There is no economy here.

Titles have an added value in that they can improve the general quality of a mediocre picture. The law of compensation was never better demonstrated than in this respect. Even his rank beginnings can be titled and capitalized to make screamingly funny film fare.

It is well to remember that imagination fills in conveniently for the individual sitting and watching a picture. A reel of the Grand Canyon of the Colorado, perhaps made under adverse atmospheric conditions and therefore not too good from a critical standpoint, could not fail to please the average film fan were it preceded by a subtitle such as:

WHERE CORONADO SOUGHT CIBOLA'S FABLED SEVEN CITIES

This title conveys information, flatters the spectators because it implies his recognition of the Spanish explorer's name, his acquaintance with the tale of the Seven Cities of Cibola and their fabulous wealth. And that willing imagination, leaping nimbly from here to there, conjures up visions of a glamorous bygone adventure. Through some psychological alchemy, the film takes on that glamor; he will always remember it.

Steve Cobb is not the name of the man about whom you shall hear. That man insists upon anonymity despite much persuasion to the contrary, which is too bad because he has accomplished a praiseworthy coup in saving a film from the wastebasket by means of titles and a few added scenes.

For more than six years Steve Cobb has made 8mm. movies. He occupies a place among topnotch amateurs because his work is original, demonstrates his resourcefulness. At nearly all times, some one of his pictures is in transit to some part of the United States.

Vacationing at Balboa Beach in sunny Southern California a year or so ago, Steve one day meandered abroad an old sailing vessel. With a companion he made pictures of the craft. He experimented with a recently acquired fog filter and with night effects by stopping down.

The creaking, musty ship stirred Steve's imagination. What a background, he reflected, as he shot something like a hundred and fifty feet on black and white film.

To Use for Stock Shots

Later, exhibiting his vacation pictures to the writer, at a certain point Steve said: "What you'll see next is just an experiment. The old ship was a lulu!"

"What are you going to do with it?" he was asked.

"Oh, I'll use it for stock shots," said Steve.

A year later, the same question was put to Steve, who promptly blushed.

"I figured I'd use it sometime," he said.

"Shame to let that much film go to waste," it was remarked.

About a month thereafter Steve sum-

moned the writer "Remember that footage I shot on the Lottie Carson?"

"Yes."

"I've done something with it."

This is what Steve did and he shall tell it.

"I decided first to make a scenario picture, pure entertainment, of those sequences

"They were unrelated for story purposes, but I figured titles could be made to tell a portion of the story. The pictures and imagination would do the rest.

"Much of the film was in low key lighting. The fog and dusk effects lent it a kind of spooky air. There were shots of feet running fore and aft, the shots Bob made of me apparently being washed ashore, and those of the kids who charcoaled their legs and executed an Indian dance.

"Now stretch your imagination. This is what I did with titles, a Max Factor beard and Bob's three-year-old son."

The projector hummed, the following appeared:

TELL ME A STORY

Title

Interior Medium shot
Steve leaning on mantel, upon which stands model of old sailing ship. Above ship hangs portrait of bearded sea captain (Steve in makeup). Steve smokes pipe, gazes reminiscently at picture

Interior Medium shot
Steve sighs, sits in wing chair before hearth, where fire blazes. He smokes, stares at fire, up at picture and ship, nods sleepily.

Lap dissolve to Int. med. shot
Old sea captain seated in wing chair, smoking pipe, watching fire. Small boy sits at his feet, looks up at him, says:

Title: Tell me a story, grandpa

Closeup
Grandpa nods assent, small boy nestles comfortably against his legs, listening.

Title. I was all dressed up in a landlubber's notion of a sailor's gear when I went aboard.

The above title excused Steve's garb, which, though nautical, was anachronistic in that it represented a modern era; also, it introduced several shots.

Title: I searched her from stem to stern, but nary a soul did I see.

Many of the sequences made aboard the Lottie Carson logically followed this title. In others to follow Steve gave the spectator a mere suggestion of what was to come. He flavored his subtitles with subtle innuendo and with them built the fascinating tale of a ghost ship manned by a spectral crew. All manner of strange things happen.

Mysteriously, the ship gets under way. The old captain recounts how he took the helm in a heavy fog. Then he introduces members of the ghostly crew, who materialize and disappear at will. The lad, in occasional flashes, hearkens in openmouth awe as grandpa spins his story.

Inevitable gaps in the chronology of events were closed by means of subtitles. Now a problem confronted Steve. In all his experimental footage there was not one single scene which could sensibly have ended the film. So Steve did the most natural thing: had the lad fall fast asleep in the middle of the old man's narrative.

Changes Mind

Steve frankly admits he should not have made stock shots in the first place without a more tangible idea of what he would ultimately do with them. Still, who is to say he did not acquire a kind of picture he might otherwise have dismissed as unworthy of his efforts?

"Tell Me a Story" possesses a quaint, nostalgic charm, gained by virtue of titles written intelligibly in the vernacular of the old sailing master. It is an interesting fact that, though Steve made a great many titles, no one viewing the film experiences the feeling that there are too many.

Titles were introduced only where they were needed, an economy second only to Steve Cobb's feat in salvaging what could easily have been relegated to the shelf with the rest of the untitled footage.

The pendulum can swing just as far in the opposite direction, the tempo of a picture too weighted with titles, or whose titles are too wordy, will slow down to a walk.

There is the instance of the man who recorded his recent marriage and honeymoon on film. Many of the titles he included were literary gems, but the effect of these was spoiled by the florid verbiage of others which savored of too many adjectives. One excess is as much to be avoided as another, and extravagence in this respect should be curbed.

Problems Intrigue

Titling is fun. It can be simple or elaborate. Matching title backgrounds and lettering to the subject matter of films presents intriguing problems which can be worked out refreshingly.

Hand-painted, watercolor backgrounds in a simple motif seem appropriate to Kodachrome pictures of vacations, though there are dozens of other applicable mediums. A historical documentary film, say of the scenerio type, might well call for parchment or monk's cloth backgrounds with stylized lettering.

Some cinematographers—Steve Cobb is one—have small printing outfits with several different type faces to provide variety.

Others rely on pure ingenuity and inventiveness. One man uses alphabet soup letters, which can be purchased cheaply. Another buys wood blockletters at the five-and ten, does interesting things with lighting. Still another uses thin plywood for backgrounds and burns his titles with an electric stylus.

Thousands of mediums are available to the enterprising amateur, many of them comparatively inexpensive. He can make titles that assemble themselves, titles that dance . . . here in fact is a field completely without restrictions, a common meeting ground for technical skill and artistic ability.

When Unnecessary

When a picture tells a fact plainly, a title is not necessary. Excluding main titles, a title never should be used unless it helps the picture to move forward, as with dialog in short stories. And by the way, the use of dialog in titles is recommended here, since it can impart a personalized flavor to the film which third person narration cannot.

Devices to supplant actual titles as such are numerous. Entrances to our national parks are usually marked by large plaques, sometimes monuments. A few frames of one of these renders the manufacture of a title unnecessary.

In some scenario pictures, short subjects dealing with few characters and having unity of plot, ideas can be translated successfully to spectators by means of pantomime and stereotyped character delineation. But makers of and participants in such films should be amateurishly expert!

"What" and "where" are by far the most important facts to be announced by titles. The cinematographer who respects his own ability to get good camera angles and right exposures as a rule titles the best of his work. But somewhere, tucked away in a corner, is that reel or two of untitled film . . . dead stuff.

Only titles can give them life.

Bolivar's Live Wire

JERRY L. DRAKE — EDITH S. DRAKE

RITZ THEATRE
Bolivar, Missouri

September 9, 1940

American Cinematographer,
Hollywood, Calif.

Please find my check for $2.50, for which enter my subscription to American Cinematographer for one year.

I have just purchased a Bell & Howell 70DA, with three lenses and accessories, and expect to use this outfit for making local news reels for my theatre.

It can be done, but it will take work.

I think your magazine a swell one. More power to John Arnold.

Sincerely yours,
JERRY L. DRAKE,
Ritz Theatre

PHOTOGRAPHY BY INFRARED

By DR. WALTER CLARK,

EASTMAN KODAK COMPANY, ROCHESTER, N. Y

Talk delivered by Dr. Walter Clark, July 11, 1940, during the General Electric Science Forum Program, from Schenectady, N. Y., over Stations WGY, WGEA and WGEO.

DURING the past few years the infrared has been endowed by the imaginative press with the most extraordinary properties, and very fantastic claims have been made for infrared photography. It has been stated, for instance, that by using infrared cameras it is possible to navigate ships through dense fogs, to detect icebergs and other vessels at a considerable distance, to land airplanes when the landing field is shrouded in fog, and so on. These and many other properties which have been claimed for it are quite impossible of achievement. It is a fact, however, that, stripped of magic, infrared photography has proved to be a most useful instrument in the hands of scientists, technologists, criminologists and the general photographer.

If it is realized that it differs in no way from ordinary photography except that it utilizes rays which cannot be seen, it will be possible to apply it usefully and realize its limitations. The infrared is identical with light in all respects except one, and that is that its waves are longer than the waves of light.

They are, in fact, so long that they do not affect the eye, and they cannot therefore be seen. They are similar to heat, which cannot be seen, but which can be detected by other means.

Infrared Not New

In the case of normal panchromatic films and plates the response to green and red light, to which they do not naturally react, is insured by incorporating special dyes during manufacture. Similarly, other dyes are known which make them record the invisible infrared.

Infrared photography has been known since the closing years of the last century, but it is only in the past ten years that it has been possible to make infrared pictures with the ease of ordinary photographs, and it is this fact which has resulted in pictures being made the importance of which has been magnified and distorted to such an extent that the real value has frequently been overlooked.

Infrared photographs can be made in any camera suited for taking normal pictures, and plates, roll films, miniature camera films and cut sheet films are made to fit all types of camera. The same lenses are used, the same developing and fixing baths, and the same procedure.

Very important is the fact that the sources of light used for ordinary picturemaking, the sun and studio electric lamps, are the best sources of the infrared. It is merely necessary to use a filter over the lens of the camera to cut out the visible light and confine the exposure to the infrared.

The best filters for this purpose are the deep red ones which are commonly used with panchromatic films to produce dark skies and striking contrasts.

Brings Out Distant Hills

For the general photographer, the greatest interest in infrared photography probably lies in its ability to penetrate haze and show up the details of distant objects which may be invisible because of the veiling influence of the atmosphere. Distant hills, for instance, which may be quite invisible, can frequently be rendered very clearly in an infrared photograph.

The most outstanding picture of this kind was made some years ago by Major Stevens of the Army Air Corps, in which Mount Shasta was shown at a distance of over three hundred and thirty miles. This haze penetration is of much value in aerial photography, for survey purposes and in war time for reconnaissance work.

Infrared landscape pictures have very distinctive and rather weird characteristics. The leaves of trees and the grass appear white as if covered with snow, the shadows are very black, the sky is black and the clouds stand out in marked contrast.

They look as if they were made by moonlight, and, in fact, infrared pictures made in sunlight are frequently used by the motion picture industry to imitate moonlight effects. In making photographs of this kind, no clouds should be in the sky, for the clouds generally associated with sunny summer days do not appear at night-time.

Won't Penetrate Fog

It is important to realize that, although the infrared will get through haze, it will not penetrate fog. The reason for this lies in the sizes of the particles which go to make up fog and haze. If they are extremely small, as they are in summer haze, they can be penetrated, but if they are large, as with the droplets of water which produce fog, they can not.

The snowlike appearance of leaves and grass is caused by the ability of infrared rays to pass through the chlorophyll which produces the normal green color, so that they can be reflected back by the tissues of the leaves and give them the appearance of being white. This has been put to a number of very useful applications.

For instance, if there is a disease in a plant which produces some change in the tissues of the leaves, it can often be shown in infrared pictures.

Different types of normal leaf behave differently, and in particular the softwood trees appear darker than the hardwoods by infrared, so that photographs made from the air over forest regions show the distribution of different types of timber, and enable surveys to be made much more quickly and economically than by the ordinary methods of counting trees.

In war time, this characteristic of foliage is put to good use, because it is possible to distinguish camouflage from natural vegetation. No green paints, such as must be used in camouflage to imitate leaves, are as transparent in the infrared as natural chlorophyll.

The black skies and harsh shadows typical of infrared shots can be used to produce very effective architectural photographs, and many other applications depending on these striking effects will suggest themselves to the imaginative photographer.

Since the infrared cannot be seen, it is rarely possible to tell how a subject will photograph by it without actually making an exposure. For instance, many black dyes used for coloring cloth disappear in an infrared picture, and a black suit may turn out as if it were white.

(Continued on Page 478)

Eastman Has New 2.7 Lens

Providing great depth of field and a wide angle of view, a new 9mm f/2.7 Kodak Anastigmat accessory lens for the magazine Cine-Kodak eight is announced from Rochester by Eastman.

The 9mm lens requires no separate adapter. At the f/2.7 opening, the depth of field extends from 4 feet to infinity; at f/8, 2 feet to infinity; at f/22, 1 foot to infinity. Other openings yield intermediate depths, the full series being f/22, 16, 11, 8, f 6, 4 and 2.7. Owing to the great depth of field, focusing is unnecessary and no focusing movement is provided.

LIGHTING EXPERTS

BESIDE the camera and behind the lens, lighting experts work in perfect agreement. Cameramen depend implicitly on the ability of Eastman negative films to bring out the best in every scene. The beauty of modern productions is striking evidence of the success of this partnership.

Eastman Kodak Company, Rochester, N. Y.

J. E. BRULATOUR, INC., *Distributors*

Fort Lee Chicago Hollywood

PLUS-X
for general studio use

SUPER-XX
when little light is available

BACKGROUND-X
for backgrounds and general exterior work

EASTMAN NEGATIVE FILMS

BILL WADE DISCUSSES ARTIFICIAL LIGHTING

By William Wade

General Electric Company, Lamp Department, (also president Los Angeles 8mm Club)

Before the Southern California Projectionists Amateur Camera Club

THE subject of artificial light sources for photography, whether amateur or professional, is an interesting one and a study all in itself.

Regardless of the application, General Electric Company has a lamp for every need—from the actual taking of the picture through processing to printing or projection, and this applies both to movies and stills, as the case may be.

First, let's consider the lamps for taking pictures. We can put these lamps in two general groups, photoflash and photoflood. The photoflash lamps burn only a fraction of a second, but with an extremely high light output, photoflood lamps also produce a great amount of light, but their life is several hours. Now to break down these groups into their individual items.

Many Varieties

Photoflash lamps are not all alike, even though they may, to the human eye, appear alike when flashed. They can be divided into two general classes, wire-filled and foil-filled, but each is made in a variety of sizes and with widely different characteristics.

However, there is one characteristic common to all General Electric flash lamps. With the exception of the No. 75 (manufactured for open-shutter use only), the peak of the flash of all lamps is .020 seconds after electrical contact, which means that when your synchronizer is adjusted for any one lamp in the GE line you may use any other lamp in the line without fear of it being out of "sink." This gives the photographer the greatest latitude possible in the use of his light sources.

Let's take them by type and see what each one is used for. The press photographers were the first ones to use photoflash lamps, so the concentration toward perfection were lamps for their use. They required a lamp which emitted a great amount of light—a high, sharp peak, one of uniform intensity and exact timing. Foil type lamps were the answer.

Synchronization Right

Several lamps were produced along the way progressing to the present lamp, which is the Synchro-Press No. 21. This lamp has a peak light output of four and a half million lumens, the most of the effective light being generated for a period of only 1/200 of a second. It is absolutely essential that the synchronization of the camera and gun be perfect to insure best results.

The peak of this lamp is sharp enough to stop reasonably fast action even when taken "open-shutter." A smaller lamp with the exact light curve as the No. 21 is the Synchro-Press No. 11-A; it has slightly more than half the light output of the No. 21 and is somewhat lower in price.

With the increasing popularity of color, and its attendant problem of color temperature of the light source, the No. 21-B, exactly the same lamp basically as the No. 21 was developed. Its blue filter coating, the dye for which was developed by Eastman Kodak Company to exactly correct the light to match Daylight Kodachrome, enables one to mix daylight and flash light. This is particularly useful to lighten foreground shadows, to give greater detail, to model the subject, and to put sparkle and life into what otherwise might be a dull picture.

The old stand-by, the Photoflash Lamp No. 75, with a peak light output of ten million lumens, is not made for synchronization. It peaks at .038 seconds, is foil-filled to obtain maximum light output and is intended for "open-shutter" work. It will cover large areas and with this in mind it is ideal for commercial, press and color work. It's a 100 to 1 that the last banquet you attended was photographed with No. 75s.

With the growth of photography bringing it to be our foremost hobby, lamps were required for the amateur—lamps which would give him a greater latitude in synchronization, and allowing for variation in adjustment. We had to recognize the fact that he didn't have the facilities to check exact synchronization.

Like Shatterproof Windshields

In addition, plus features were provided—a quick-break filament, low-battery drain and maximum protection for the subject being photographed, the latter being accomplished by coating the bulb inside and out with a tough, resilient lacquer.

This prevents the glass from shattering, and gives the same kind of protection provided by the modern shatterproof windshields in your car. (All General Electric flash bulbs are now built with this coating.) So the Synchro-Press No. 7 and No. 16-A were introduced.

These are wire-filled lamps with a wide peak and yet producing light measured in the millions of lumens. They are low-cost lamps with a wide variety of uses, even to use with focal-plane shutters on some miniature cameras.

Needless to say, a sharp peak lamp could not be used with a focal-plane ter. The only thing to do then was to make a lamp especially for focal-plane shutters. The No. 30 and 31 are the lamps for this purpose.

When you stop to think that a focal-plane curtain at an exposure of 1/1000 of a second takes 32/1000 or about 1/30 of a second to cross the negative area of a 4 by 5 camera, then even with a wide-peak lamp, the maximum part of the flash is used. With the focal-plane lamps you have a flat peak of 1/20 of a second, so you are sure of having the entire negative more evenly lighted.

Most Versatile

The newest lamp in the line, and the cheapest, the "Mighty Midget" Synchro-Press No. 5, is the most versatile of all. This walnut-sized flash bulb is good for 80 percent of all flash pictures when proper reflector equipment is used. It has a peak of one million lumens, the bayonet base allows quick changes of lamps with no burned fingers, and its midget size enables two dozen to go into a coat pocket of ordinary size.

When it was introduced, we claimed that pictures could be taken, adequately lighted, at a distance of 150 feet. Of course, this was disbelieved, but now the scoffers have proved to themselves that it is true and more. It is now a flash lamp dear to the heart of everyone who has used it.

For the constant light necessary for movies and also in certain kinds of still pictures, the Photoflood type of lamp gives a wealth of actinic light. There are three sizes of photofloods, and a table comparing them is given below:

	Base	Life	Amperage Consumption	Lumen Output
Photoflood No. 1	Medium	3 hrs.	2.17	8,650
Photoflood No. 2	Medium	6 hrs.	4.34	17,000
Photoflood No. 4	Mogul	10 hrs.	8.7	33,500

In addition to the above, there is the R-2 Reflector Photoflood, matching in electrical characteristics the No. 2 Photoflood, but with a built-in reflector. It gives a 60 degree beam, it is compact, easily handled and it means at all times that you have good, clean reflector equipment.

Straight or Mixed

For use with Daylight Kodachrome, a special line of Blue Photofloods, exactly the same as the Nos. 1, 2, and 4 above, are available, the only difference being the glass is blue instead of the conventional inside frost. These can be used alone or mixed with Daylight.

There is also a line of various sized lamps rated at 3200 degrees Kelvin for use with Eastman's Type B Kodachrome only.

Of course there is a multitude of lamps in various sizes up to ten kilowatts consumption for general studio use some for "spots", some for "floods" and others for many other applications

The white opal glass enlarger lamps are offered in a variety of sizes from 50 to 500 watts and several different bulb sizes The opal glass gives good diffusion, eliminating "hot spots," and generates a white light, more effective on photographic paper The identifying etching on all of these lamps is on the neck of the bulb, thereby casting no image on the work

Projection lamps are manufactured normally in sizes ranging from 50 to 2000 watts Maximum light is emitted by all lamps in the line

Lamps Perfected

Bulb-blackening has been reduced to a minimum These lamps have been perfected to such a high degree that as an added feature, in the middle range of wattages, a black ceramic coating has been provided on the end of the bulb to eliminate the necessity for the metal caps used in the past

The heart of the sound projector is the exciter lamp, and many styles and sizes have been developed for use in the various equipments

New light sources are constantly being introduced The water-cooled capillary mercury lamp, smaller in size than a cigarette, but having an intensity equal to 1/5th of the surface brightness of the sun, is valuable in photo engraving Fluorescent light is gaining in favor as a photographic light source, being glareless and cool to the subject. Tomorrow—who knows what?

As perfection is gained and costs are lowered, the saving is passed on to the consumer Prices are constantly being lowered and efficiencies being stepped up This means a twofold saving to the consumer—variety, versatility and economy are the watchwords of the General Electric Co., so synonomously, when you think of "artificial light source," think of "G E"

PROJECTIONISTS CHOOSE NUDES FOR THEIR SALON

By PAUL R. KRAMER

THE members of the Southern California Projectionists Amateur Camera Club were treated to a pleasant surprise in September in the shape of a 16mm sound film put out by the General Electric Company on the new type flash bulb. This film I would recommend to any camera club, be they amateur or professional There are things shown in the high speed motion picture film that the eye could not possibly record William Wade, for G. E., demonstrated a large lamp equipment in most interesting manner

The assignment for this month's contest was a tough one, "Nudes." Some of you readers may smile when you read about the tough part, but if you have ever tried successfully to photograph an undraped figure you won't laugh. I know because I have tried. It was the hardest four hour's work I have ever put in just to get four negatives Some photographers may hook up the old flash gun, put in a flash bulb and have at it But I will say that to get results one must work for it

First of all, you must have a pretty definite idea as to the type portrait you want Then you will want to know whether your lighting will be on the exotic trend or of the high key type. Some models seem to respond to high key lighting, while others seem to do much better with low key or dramatic lighting I tried both with my model, and as a result received second award on the high key lighting and honorable mention on the low key, or as I put it, exotic lighting.

The winners were definitely on the high key side this time. Ed McQuoid's "Ariena" won first award in the finalists' class Ed's story of the lighting of his model, Miss Ceder, will convince you that the high key lighting was the only one to use, although I tried low key lighting with fair success and will for no reason at all put up a pretty good argument on the subject.

This man Leo Moore certainly went to town, winning first, second, honorable mention and popular award in Class A.

He shows the handiwork of a master. This is in no way a statement to start an argument Although in this instance I cannot agree with the judge, personally I think his "Show Girl" should have received the first prize, but then Mr Hall, the Judge, is only one of Hollywood's better photographers, having a very fine studio at 532 North La Brea and I—well, I am still hoping to get the elusive first award, but, thank God, this is America, and we can disagree with any one we wish and still live to argue about it

Porter Studley received third award in Class A for a photograph that is as exceptionally fine as is Porter himself. This member has only turned in two photographs this year, but both of them have shown the individuality of a man that insists upon bringing in a print that he is satisfied with, no matter what the cost in standing or the opinions of others

If the reader has the time to go to the Los Angeles Camera Exchange, at 1017 South Olive street, in downtown Los Angeles, and view the works of this camera club on exhibition there, you will see in Porter Studley's print the qualities of a photographer that will only be satisfied with a print that to him is different.

Thing of Beauty

Again Paul Neuerburg wins first award in Class B This is getting to be a habit but when a member turns in such prints as Paul has turned in this year, he deserves any reward that can be given to him His "Girl and Pool" is a thing of beauty The composition and the work done after the shot was made is the fine part of this print. Had the background been a trifle lighter, it would have detracted from the model in the foreground, although it would have enhanced the picture as a whole.

The posing of this model shows a lot of study Just a different angle anywhere and the picture would be lost. Paul tried it and the other print was passed up, although the workmanship was just as good on both prints.

At last I finally crashed in the winning class, my print "Figure Study" winning second award and my "Exotique" winning honorable mention. Paul Neuerburg received third award with his "Sunbather" and Duane Adams received popular award for his "Silhouette," which was a very fine piece of work, yet on the very dramatic side His handling of this model was fine

Strong Judging Committee

We have one more contest before the great final Salon, where we will select the best picture of the year. This will be selected by a group of the finest photographers in and around Los Angeles The judges will be Mr. Nickalous of MGM studio head of the laboratory and one of the world's best known authorities on all phases of photography; Ernest Bachrach of RKO studio, who for the past years and at present is one of the topnotch portrait photographers with a worldwide reputation; Al Schaefer of Columbia studios, whose technique in photography is the envy of lighting experts, Ray Jones of Universal studio, the man who is credited with the year's best speed and action shots. Ray's work at Universal has brought him to the top in his line of photography

To make the fifth man on the committee we have selected Laurence Kronquist, head of the Douglas Aircraft art department and one of the finest aerial and exterior photographers on the west coast. This is the group of judges who will decide the final contest for the best picture of the year of our camera club This contest will be held in November

The October meeting of our club will me held the first Thursday the 3d at Local No 150's headquarters, 1489 West Washington boulevard, at 10 30 A M The subject will be landscapes, and judging from the number of members who have taken vacations recently we will have a large number of fine prints

The Eggert Road Plant of Spencer Lens Company as it will appear when the three new additions are completed early in 1941.

SPENCER LENS EXTENDS FOR NATIONAL DEFENSE

THE enlargements or expansion being undertaken by the Spencer Lens Company of Buffalo supplies the best possible illustration of the demands being made upon the source of supply for optical instruments and parts by the National Defense authorities. A little over a year ago the Spencer Company erected a building covering a plot approximately 100,000 feet, believing it would be adequate to last a long time A contract has been let for additional buildings.

"One unit of approximately the same size as the present mechanical parts plant, completed a year ago, will house certain prism and lens manufacture," says President B. H Witherspoon "A connecting unit two and three stories high will be utilized for the assembly of special contract work A third unit will provide expansion for the mechanical parts operations

"The new buildings will be of the same general type of construction as the unit completed last year, and will involve the latest developments in heating, lighting, plant layout, flexibility for expansion and changes, and working conditions and facilities contributing to the welfare of our employees Approximately 130,000 square feet of additional floor space will become available through this new construction

"Orders for machinery and equipment have been placed, and it is planned to have the new unit in operation not later than February 1, 1941.

"Approximately one million and a quarter dollars will be expended in carrying through our current program The growing demand by educational institutions and industry for the regular products of the company such as microscopes microtomes, projectors and other scientific optical instruments has taxed our production facilities in spite of our expansion last year. The new demands upon the optical industry, as one of the key factors in the defense program, necessitate our promptly putting ourselves in position to meet the requirements of the present national situation"

Techniprocess Corporation Tries Out Its 16mm. Film

The Techniprocess and Special Effects Corporation of Hollywood has recently demonstrated its first product of 16mm. slot machine pictures and songs. The product was shown in a box about 6 feet in height, 3 feet wide and 2½ feet deep. The boxes may vary in size from 5 to 7 feet, according to the individual manufacturer's design. The product is designed for distribution in public places and to be shown to one person or forty. The number is limited only by the size of the screen, which may be as large as 3 by 4 feet.

As shown at the demonstration the program was in five pictures, each of three minutes' running. When the pictures are released the customer will be able to nominate which one of five he prefers to patronize and will be able to place his coin accordingly. It is designed eventually to have the device accessible to homes.

Mario Castegnaro is the producer, with John Seitz, A.S.C., and Ralph Hammeras associate producers. Associate directors are Wallace Milan and Jack Murray Edwin Hammeras, A.S.C., handles the photographic end and the special lyrics and music are taken care of by Philip Horton.

The pictures are shot first in 35mm and then reduced to 16mm.

Academy Calls for Gifts to Rapidly Growing Library

During the past few years so many individuals voluntarily have contributed valuable documents, periodicals, photographs and other data to the library of the Academy of Motion Picture Arts and Sciences that now the Academy is extending an invitation to the general public to contribute historical material to this institution.

Only recently Richard Barthelmess gave the Library his scrapbook collection covering a period of twenty years of acting. Many players, writers and directors are contributing valuable historical items.

At present the Academy library ranks among the four most complete specialized collections in this country of historical and reference material on motion pictures In the collection are 1969 books, including selected scripts; 628 bound volumes of trade magazines; 7000 unbound issues of magazines and trade papers; 2000 issues of foreign magazines from many countries, and some 15,000 pamphlets and clipping folders, totaling about 26,000 items, with more being added daily. Anyone desiring to contribute documents or other items to this rapidly growing collection is requested to write to the Academy in Hollywood.

Photo Markets

The Ninth Edition of Photo Markets—What to Shoot, Where to Sell It, has recently been issued. The book, which is 136 pages, compactly printed, contains 2000 complete pictorial photographic markets It was issued from its new home at Hanover, Penn. The market, in groups, is listed in the first half of the book, and then come trade and profession papers About every conceivable branch of their divisions is listed

COUNT DE SAKHNOFFSKY TALKS ON STREAMLINES

COUNT Alexis De Sakhnoffsky, pioneer and leading exponent of the art of streamlining in industry, late in September made his first presentation of several startling "streamlined ideas" before the American film industry.

The industrial artist-engineer spoke before a special meeting of the Los Angeles group of the Society of Motion Picture Engineers September 23, in the sound department meeting room at Metro-Goldwyn Mayer studios in Culver City.

Titling his address "The Creation of Obsolescense," the count spoke in clipped, precise language to present his ideas on the controversial subject of bringing art and engineering into a more solidly welded, smoothly working companionship in the American Motion Picture industry.

"I believe that 'creators of obsolescense' the name that suits an artist-engineer best," the count told the assembled engineers, "because in a great many cases we are called in to change the appearance of a product which has reached perfection in its function, but needs a new dress to stimulate sales."

Count Sakhnoffsky applied his theories to the motion picture industry as an engineer with the statement:

"In your own industry practically every picture is obsolete as soon as it is released to the public. Going further," he pointed out, "we notice that even types of pictures or characters will become obsolete after a certain run.

Pictures Age Rapidly

"Going still further, we note that even trends become gradually obsolete. But the difference between your industry and the others is that the motion picture industry generally tries to fight obsolescence, while the others create an artificial obsolescence to stimulate their sales."

Explaining the many practical applications of streamline engineering in creating "greater facility in operation by human hand, greater eye appeal and greater stimulation of imagination," Count Sakhnoffsky told the engineers that "the possibilities in the field of motion picture equipment for effective streamline engineering have not even been scratched."

Another field into which the speaker predicted the motion picture industry would soon be completely and successfully emerged is the "scientific use of color."

Innovations in Color

"The use of color has become such a highly specialized science that a number of men have devoted all of their time to consult manufacturers in the proper use of color to obtain definite results without guessing.

"During the years of my work for Esquire Magazine I have developed many an innovation in color," the count explained. "Such, for instance, was the 'International' use of color. By that I mean the identification of certain commonly used things without having to resort to inscriptions in any one language.

"An example was a design for a bathroom in which the hot and cold water taps were identified by blue and red knobs (blue for cold; red for hot) which did not require anything further.

"Within a few months after my sketches were published, one of the leading international air lines asked us for permission to use the idea in all of their large transport planes which flew between countries in which a diversity of languages was used.

"Permission granted the airlines made the two colors and their significance an 'international' grouping in their planes and in the rooms of their airport buildings and waiting rooms. The use has, over a period of three years, spread to various other public buildings within the various countries."

Forecasting that the ever-increasing use of color in motion pictures will force the industry to become acutely color conscious on a scientific basis, the count pointed out that there are "cycles and trends in color just as there are in fashions or world events," and stated that these cycles can be accurately anticipated as much as a year in advance.

Revolutionary Changes

The science of color usage is developing more rapidly today than at any other time in past history, he said, and as industry learns and uses its knowledge of color it becomes a familiar and commonplace thing to the general public.

"This means much to the motion picture industry, for it will necessitate the industry's conducting research to such a point that today's use of a color in a film will fill tomorrow's needs and coincide with tomorrow's trends."

In closing, the count predicted that within the next two years the motion picture industry would find a "new efficiency and practical speed in the simplifying and streamlining of present equipments and methods" that would "with startling new uses of colors" be a most welcome "though revolutionary change in the present procedure of making motion pictures."

Sakhnoffsky delivered his address before the motion picture engineers after several weeks spent in Hollywood on a tour of major motion picture studios. He has during the past month closely inspected the equipment and operation methods of almost every technical department in a modern motion picture studio.

WILL HE STREAMLINE HOLLYWOOD?—The Count Alexis De Sakhnoffsky, pioneer and leading exponent of streamline design in industry, is shown here as he lunched recently at the Hollywood Brown Derby with members of the Society of Motion Picture Engineers. The Count, a naturalized American citizen, is internationally known as an industrial artist engineer.

Audio-Visual Educational Conference Set for Nov. 14

For the fourth consecutive year, the Southern Conference on Audio-Visual Education will hold its regular annual meeting at the Biltmore Hotel in Atlanta, Thursday, Friday and Saturday, November 14, 15 and 16.

The meetings of the Southern Conference always have attracted large numbers of county and city superintendents, principals, and teachers, as well as college instructors, from more than a dozen states in that part of the country, actual registration indicating attendance of from 800 to 1000 persons interested in the use of modern media of instruction in classroom and laboratory. No registration fee of any kind is charged for attendance at the conference.

Last year, for the first time, one entire afternoon was devoted to open forum and panel discussions and clinics on various subjects in the field of audio-visual education. So well attended and so interesting and profitable were these special group studies and informal discussions that in preparing the program for the approaching annual meeting of the Southern Conference it is planned to broaden and enrich the discussions and clinics on various topics in the field of audio-visual education.

Programs of the conference will shortly be mailed to those who manifest an interest in the Conference. Requests for copies of the program, and for any other information about the Southern Conference on Audio-Visual Education, should be addressed to the Conference office at 223 Walton Street, N.W., Atlanta, Georgia.

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ENGINEERS CONVENE IN HOLLYWOOD IN OCTOBER

THE 1940 Fall convention of the Society of Motion Picture Engineers will be held at the Hollywood Hotel in Hollywood from October 21 to 25 inclusive As usual W C Kunzman of Cleveland is the convention vice president, and as usual the convention will be assured of competent arrangements His fellow-conspirators are C W Handley, J Frank Jr., Sylvan Harris and Walter R Greene

The officers and committees in charge are E. A Williford, president, Nathan Levinson, executive vice president; W C Kunzmann, convention vice president, J. I Crabtree, editorial vice president, Loren L Ryder, chairman, Pacific Coast Section; H G Tasker, chairman, local arrangements committee

Pacific Coast Papers Committee—C R Sawyer, chairman; L A Aicholtz O O Ceccarini, F. M Falge, C Faulkner, C. N. Batsel, W A Mueller, J Stewart, H G Tasker

Reception and Local Arrangements—H G Trasker, chairman; Nathan Levinson, K F Morgan, Peter Mole, A M Gundelfinger, H W Remerscheid, G S Mitchell, L. D Grignon, G F. Rackett, H W Moyse, W C Miller, W. A Mueller, C L Lootens W. V Wolfe, E C Richardson, Emery Huse, J O Aalberg, R. H McCullough, J M Nickolaus, E H Hansen, R. G Linderman, F M Falge

An exhibit of newly developed motion picture equipment will be held in the Bombay and Singapore Rooms of the hotel, on the mezzanine Those who wish to enter equipment in this exhibit should communicate as early as possible with the general office of the society at the Hotel Pennsylvania, New York

The semi-annual banquet of the society will be held at the hotel on Wednesday, October 23, in the Blossom Room. A feature of the evening will be the annual presentations of the SMPE Progress Medal and the SMPE Journal Award Officers-elect for 1941 will be announced and introduced, and brief addresses will be delivered by prominent members of the motion picture industry The evening will conclude with entertainment and dancing

The informal get-together luncheon will be held in the Florentine Room of the hotel on Monday, October 21, at 12:30 p.m

At the time of registering passes will be issued to the delegates to the convention, admitting them to the following motion picture theaters in Hollywood, by courtesy of the companies named Grauman's Chinese and Egyptian Theaters (Fox West Coast Theaters Corporation), Warner's Hollywood Theater (Warner Brothers Theaters, Inc.), Pantages Hollywood Theater (Rodney Pantages, Inc.) These passes will be valid for the duration of the Convention

An especially attractive program for the women attending the convention is being arranged by Mrs. Loren L Ryder, hostess, and the committee.

Zanuck Names Committees to Look Over Sound Field

Darryl F Zanuck, chairman of the Research Council of the Academy of Motion Picture Arts and Sciences, Sept 3 announced the appointment of a number of sub-committees to operate under the supervision of the Council's Basic Sound Committee for the investigation of a number of problems in the sound field

A sub-committee under the chairmanship of James G Stewart of RKO Radio Studio Sound Department, will investigate possibilities for economies in sound recording dubbing

A sub-committee under the chairmanship of William Mueller of Warner Brothers will investigate set sound recording problems.

A sub-committee to work out methods for eliminating flutter in sound recording equipment will function under the chairmanship of S J Twining of Columbia Studio

Some Real Ones

(Continued from Page 439)

ginia Bruce for the women All of them—in temperament, disposition, every way—are as far apart as the poles Russell is the business woman, the secretary, who keeps her boss out of trouble by her cleverness in the pinches, who even marries him just to provide him with a wife that he may the better win out in a business battle, who when the world has gone against her and she is leaving the home of which she has for so short a time been so legally unacknowledged a part is seized with a dramatic inspiration.

She closes the already opened door and returns to the centre of the room, carefully and thoughtfully draws back one well-shod foot and over the incumbent body of a perfectly unconscious near-husband she deliberately, even slowly, administers one well-directed kick. Then with chin high she sails in comparative contentment from the scene of discord.

Virginia Bruce is smart and gets along even though she may not know as much about business ways as does the secretary Aherne is the great cement egg who in the springtime sometimes gets goofy about the women Benchley is a lawyer who attends Aherne John Carroll is a South American and a convincing one who fits in the story to the mirth of all.

Milton Krasner, A.S.C., is director of photography; carefully does he carry out his duties Understandingly he interprets a business woman as a business woman and not as something else again, glamor, for instance. The photographer who records naturalness enhances and does not detract from the art of the actor. There are sequences when the glamor thing gets a play from Krasner They are the night club sets Jack Otterson and his art department also are responsible for an elaborate business office, it being employed perhaps one-third of the picture

•

A Dispatch from Reuter's

Warner Brothers Studio has produced another most praiseworthy picture in "A Dispatch from Reuter's." It portrays the foundation of the first news agency, beginning in 1833 and proceeding to 1865, although the agency in fact is in existence today Edward G. Robinson is the chief player—and it is a matter of screen history that when he is a chief player then unusual results are sure to follow. One of the more recent of these is Dr Ehrlich.

Edna Best plays opposite him She is another player whose rare quality is enhanced by her exceedingly rare appearance Other players are Albert Basserman, new to the American screen but not to the work he undertakes—if he is old in years he also is in experience; Gene Lockhart, Otto Kruger, Nigel Bruce, Montagu Love, James Stephenson, Walter Kingsford, David Bruce, Lumsden Hare and Dickie Moore.

The story covers the early days of the pigeon post and of the telegraph The locales and the sets are varied and of particular interest One of these was the laboratory and the bulky electromagnetic telegraph of 1833, the exterior of the London Times as it stood in 1850, the stage of Ford's Theatre in Washington and the box occupied by Lincoln, with the exact scene being enacted on the stage at the time Lincoln was shot; the London Stock Exchange the same month, the varying locales of Aachen, Brussels, Paris, London, Crookshaven, New York, Washington and back to London.

James Wong Howe, A.S.C., directed photography, and the special effects were in charge of Byron Haskin, A S C, and Robert Burks, A S C. For those who can take their minds from the story or permit them to be so seduced they will find plenty that is intriguing in the photography.

•

Strike Up the Band

MGM hit a real stride when it went into the making of "Strike Up the Band" It counted not the cost nor the time and pains of making It was a musical of a new order and a rather entertaining one In fact, it is a long show, and there are stretches of considerable size when

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one comes to earth and dimly realizes he has been away from things—that he has been looking in on happenings that absorbed all of his attention

Featured are Mickey Rooney and Judy Garland And that is a team It is fully fifty-fifty. Judy Garland, in spite of the fact Mickey Rooney somewhat exceeds in the work his best friends deemed him capable, is fully matched by the girl who keeps him company Truth to tell you might add years on to the age of each and still be more than satisfied with their work

Paul Whiteman enters the picture for an interesting sequence along toward the end, most surely concealing the score of years he has behind him in gathering the ways of orchestral doings It's an unusual sequence

One of the highlights is the playing of the massed high school bands at the closing Four of these bands, the members of which are not necessarily restricted to high school age, make a showing to be remembered. While it hardly would have been necessary on account of the numbers involved at the same time it would have been possible to have had the sound "enhanced" and thereby made of still greater volume through the recent devices evolved by Electrical Research Products, Inc, in the field of stereophonics.

Just one quartet in the list of players would have occasioned comment at one time—George Lessey, still going strong, by the way; Enid Bennett, Howard Hickman and Helen Jerome Eddy There were others, too While the picture is running one becomes aware of its length, which sometimes is an indication it might with advantage be shortened

Ray June, A S C, directed the photography It was really a major job, and it was performed in a major way—better than 100 percent

CHRISTMAS SEALS

Help to Protect Your Home from Tuberculosis

Dr. Kildare Goes Home

Undoubtedly this newest "Kildare" picture is the best of the series It contains all the elements of good entertainment humor, excitement, a good story, and satisfying love interest

"Dr. Kildare Goes Home" is just what the title implies He goes home to relieve his father of the overheavy practice with which he is attempting to cope In the process young Dr Kildare and three other young doctors establish a clinic in a small tradition-bound town

Their attempts to overcome prejudice and ignorance in this town is the foundation of the story The plot was not excitingly new, but was handled by the players and directed with a deftness that gave it high entertainment value As were its predecessors, this Dr. Kildare picture is for all the family.

Handling their parts with all the assurance and enjoyment of a well-liked job, Lionel Barrymore, Lew Ayres and Laraine Day were excellent in the top roles Miss Day improves with every picture The rest of the cast, many of them seen in the former pictures of the series, were all good

Credits go to Harold S. Bucquet for his fine direction of the screen play by Harry Ruskin and Willis Goldbeck The photography by Harold Rosson, A.S.C., was noticeably good M D

●

Brigham Young

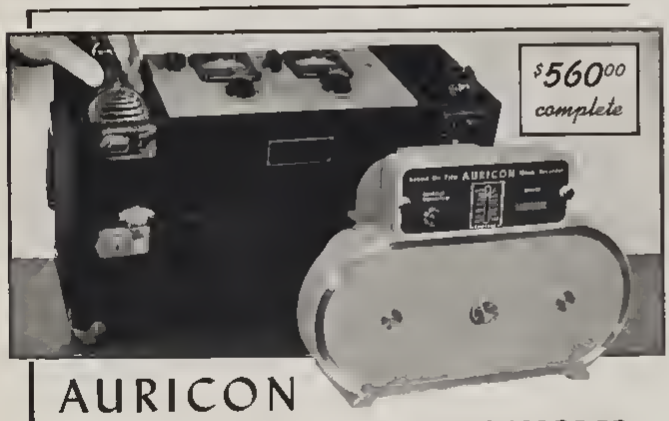
Brought to the screen in a truly epic manner, "Brigham Young" tells the little known story of the historical mass migration of the Mormons to the west Credit is equally divided between the cast and the army of workers that brought to the screen this moving and stirring period of American history The picture is frankly historical with the characters as support

Henry Hathaway's direction was excellent His handling of many scenes that would have in other hands brought forth laughter and a squirming discomfort was masterly The photography by Arthur Miller, A.S.C. was splendid Of particular note were the scenic shots, which were beautiful

Playing the title role Dean Jagger brings a forceful and compelling Brigham Young to the screen His strength is felt to its fullest, particularly in the courtroom scene where he pleads for Joseph Smith, played by Vincent Price. It is to be hoped that Mr. Jagger will be a permanent addition to the screen.

As Brigham Young's wife Mary Ann, Mary Astor gives a moving and beautiful performance. The weight of the Mormon persecutions appear to rest on her shoulders Tyrone Power and Linda Darnell provide the love interest Both were excellent The cast is too long to give individual mention of each; suffice it to say that all were good

The picture was produced by Darryl F Zanuck for Twentieth Century-Fox from the story by Louis Bromfield M D



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8mm. Cameras Behave Like Their Big Brothers

(Continued from Page 451)

out of focus. When shooting at apertures larger than f8 on close subjects, use a tape measure or an accurate range finder, for determining the distance to the subject from your camera. Don't depend on your judgment or estimation.

Approximate Angle of View for 8mm Camera Lenses

Metric Scale	English Scale	Angle Degrees
12.5mm to 13.5mm	½ inch	20
25mm	1 inch	10
37mm or 38mm	1½ inch	7

When using a certain lens for a shot it is well to memorize the angle of view for that lens, as exposure meters have varying field angle depending on the model you use. Thus, if you are using a lens on the camera with an angle of 20 degrees don't take a reading of the subject from the camera with a 60 degree angle meter, as the meter is covering three times as much area as the lens, and the reading may be wrong.

Whenever it is possible, if you are using the combination just mentioned, take the reading about two-thirds the distance to your subject, then the meter is covering the same field as the lens.

The Weston Company market a cine meter that has a 25 degree angle conforming with the angle of standard lens equipment on cameras. Other models are built for using with still or miniature cameras having many different lens angles.

Angle of View for Exposure Meters

Meter	Model No.	Angle Degrees
Weston Junior	850	80
Weston Universal	650	60
Weston Cine	819	25
General Electric		Vertical–30 Horizontal–60

The view finder on cameras is situated above or to one side of the camera lens, and is calibrated to give the eye the same area of field that is covered by the lens. But when you are filming subjects within six feet of the lens, we must make some compensation for the distance between the lens and view finder.

Beyond six feet the view finder includes practically the same area as the lens, and it is not necessary to readjust the camera to allow for the slight variation. If the view finder is located directly above the lens for subjects within six feet, the camera must be tilted up a small amount to give the lens the same area as the view finder.

If the finder is located on the right side of the lens the camera must be swung to the right slightly. Most camera finders are marked by an arrow, scale or small line to correct for this condition. When this allowance is made for closeup work it is known as adjusting for "parallax." Cameras that are equipped for viewing through the lens eliminates this adjustment, as the lens shows the definite outline of the field that it covers.

If no adjustment is made for parallax or closeups, you will cut off the top of the head of the person or one side of their face. For extreme closeups within two feet, place a yardstick along the camera, parallel with lens, to the subject. This will do away with any guesswork, as a finder is valueless at such close range.

Research Council Takes Up Standardizing Vacuum Tubes

Darryl F. Zanuck, chairman of the Research Council of the Academy of Motion Picture Arts and Sciences, announced appointment of a sub-committee under the chairmanship of John K. Hilliard of Metro-Goldwyn-Mayer Studio to consider the possibilities for standardization of vacuum tubes used in sound recording work. Membership of this committee in addition to Mr. Hilliard will include Lloyd Goldsmith and William Thayer.

The appointment of a sub-committee to study possibilities for standardization of plugs, cables and associated equipment was also completed to include in its membership C. W. Faulkner of Twentieth Century-Fox Studios, chairman; C. F. Pratt and Homer Tasker.

Both of these sub-committees will function under the direction of the Council's Basic Sound Committee, of which Loren Ryder of Paramount Studio is chairman.

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Close-up of one of the Hawaiian legislators in March of Time subject, showing results of overhead photofloods.

Photofloods Mean Much

(Continued from Page 461)

lights for the workmen. Most factories are equipped with 250 or 500 watt bulbs. If the reflectors already in use are widely spaced and carry 500-watt bulbs, it is only necessary to replace them with the Mogul base 2000-watt photofloods.

If the house sockets will not accommodate the Mogul base, an adapter can be used. If the room is equipped with many small reflectors and bulbs over each machine unit, then the No. 1 standard socket photoflood will do the job perfectly.

Photofloods' Even Light

Photofloods used in this way give a much more even and more effective light source than the large, powerful spots which have to be used at a relatively horizontal angle. And often machinery parts, posts, shafts, etc., prevent the light of the big spots from reaching the subject.

Such a set-up of photofloods can usually be made while the factory is running if the workmen do not need the standard lighting. If they do, then the change-over to photofloods can easily be done during the lunch hour. If the factory job does not call for any large sets, a few photofloods can be used very conviently for closeups at various machines.

To mold closeup subjects with side lights, several No. 1 photofloods in standard clamp-on reflectors are handy as well as indespensable. For big factory sets, a couple of small spots will be advantageous for modeling closeups and the foreground.

Some of the large sets where photofloods were used for March of Time's far reaching coverage were the Chinese mint in Shanghai, the Hawaiian Legislature in session, the First National Bank in Honolulu and the block long Kress store in Honolulu.

In all three sets in Honolulu there were exceptionally high ceilings, and it was impractical to hang the photofloods down from the ceiling both because they would spoil the appearance of the scene and because there were no beams or other places from which to hang them.

Ten No. 1 Photofloods

However, there were upright pillars evenly spaced throughout the bank and the store. A camera position was chosen to include as large an area as possible in between the pillars, leaving the pillars just outside the camera angle. A 12-foot plank, 8 inches wide and 1 inch thick, was obtained for each pillar, and a vertical bank of ten No. 1 photofloods prepared on each plank.

Wherever possible these banks were placed on the side of the pillars toward the camera field, being careful not to have the direct rays visible from the camera position. On all of the other pillars within the camera field, the banks were placed so as to be obscured from the camera by the pillar. A fine wire held the banks in place vertically.

As only one general view was needed in the Kress store, the service lines were allowed to lie on the floor behind the counters. Wherever the lines crossed the aisles they were guarded with planks. A main switch was installed so that the lines would not be alive except for the brief time when the shot was made while the store was crowded at noon. At the bank was a balcony where all service lines were concealed.

There were no pillars in the Legislature Hall, but all down one side deep-set, high windows, close together, provided just the place to conceal the photo-

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Photofloods overhead in small cone-shaped reflectors all down line in March of Time's Tobaccoland U. S. A.

flood banks. The camera was placed on the same side as the windows so as to

Reflectors Hidden From Camera

be sure of not picking up any direct rays from the lights.

Dark corners on the far side of the room were lighted with bulbs placed in reflectors here and there on the floor and hidden from the camera by members of the Legislature, while they were in their respective seats. The platform was conveniently lighted by photofloods hidden in the drapery above.

In Tobaccoland—U. S. A., the 3-reel commercial made by March of Time for the Liggett & Myers Tobacco Company, photofloods were used almost exclusively. Here, enormous factory rooms had to be covered not only for complete general views but for detail shots and intimate closeups.

Single photoflood bulbs were just the answer for shots looking inside tobacco mixing drums and corners of complicated machines.

For a quick set-up in the tobacco auction room which was over seven hundred feet square, photofloods and cheap conical reflectors were the ready answer. There was no available wiring in the building. We called on the electric company to place a portable transformer just outside the main center door and run in four feeder lines to divide the load.

The area included by the camera was charted so as to establish its right and left boundaries. We knew that we wanted to include the entire floor from the near foreground to the far wall.

Light Every Fifteen Feet

We figured on having a light for about every fifteen square feet of space and to let them be about five feet above the heads of the people. There were upright pillars in two lines down the center of the area we wanted to cover and vertical beams stretching overhead between the pillars at just the right height. Here it was perfectly in keeping with the atmosphere of the scene to have the reflectors show in the picture.

The big shot that we were after was a full general view. The camera was set up in a balcony just under the ceiling. In this way there was no possibility of any stray rays from the reflectors getting into the lens, as the camera saw only the tops of the conical reflectors.

These reflectors were turned out in short order by a local tin shop for ten cents apiece and we did not even bother to paint the backs black. To get some light down closer to the floor a reflector was put behind each upright pillar just about six feet from the floor and pointed in toward the center of the field of view of the camera. Push-pin type sockets were our greatest aid on this job.

Black weather insulated wires were strung in two lines back and forth from the front to the rear of the set and these convenient sockets were readily put in along the lines without scraping off the insulation to make connections. One very great advantage of these sockets is that their position can be readily changed and that they can be used over and over on different jobs.

In all of the sets for Tobaccoland—U. S. A., the Chesterfield cigarette film, overhead light, conveniently arranged with photofloods, was not only economical but provided a perfect light source.

All of the interiors in the farmhouse for Tobaccoland—U. S. A. were made with photofloods fastened close to the ceiling for the main light source. Two movable photofloods were used for molding the subjects in closeups.

Here's a Setup

A convenient working set of photofloods for home moviemakers, newsreel cameramen or small scale commercial producers should be 12 medium reflectors that nest compactly, 12 spring clamp holders, 6 twenty-five foot extensions, 36 No. 1 photofloods, and 10 No. 2 photoflood bulbs, one plugging box with 12 recesses and built-in switch, miscellaneous sockets, plugs, fuses, screweyes, small gauge wire, nails, a screwdriver and hammer.

An extra large tin or fibre suitcase

(Continued on Page 477)

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Practical Amateur to Beginners

(Continued from Page 454)

ing of mostly blue light which has the effect of making the picture when screened appear slightly over exposed.

There are two methods available to overcome this difficulty. One is to photograph the object when it is side lighted—this will result in a better image contrast being obtained, but the most effective method is to increase the contrast by using an orange or deep yellow filter. Distant scenes photographed with a telephoto lens in this manner compare more than favorably in contrast, perspective and drawing, with scenes filmed by a regular lens.

The use of an electric exposure meter with a telephoto lens is just as important as it is with other lenses, and measuring the reflected light from a distant scene is as simple as measuring the light from a nearby object if the following method is adopted.

Erect the camera on a tripod, use the largest viewfinder to level the camera, because it is difficult to obtain a true horizontal through the small viewfinders of telephoto lenses, then view the scene to be photographed through the correct viewfinder, now calculate the exposure for this scene by measuring the reflected light from a scene of similar average tone handy to the camera.

6-INCH LENS

The 6-inch lens is hardly suitable for average work, but is useful for the naturalist. With all lenses a tripod is recommended, but with telephoto lenses it is essential.

EXTENSION TUBES FOR TELEPHOTO LENSES

By placing a short length of metal tubing between a telephoto lens and the camera, small subjects such as insects can be photographed at a distance of about a foot. When it is mentioned that a lens extension of 1.38 inches fitted to a 4-inch lens will permit a field of 1¼ inches wide and 5/16 inch high being covered, the reader will realize the possibilities of these accessories which are available to cinesmiths who wish to try this interesting branch of cinemacrography.

Manufactured for screw-type lenses is an accessory known as the Goerz reflex focuser, which has a movable prism, a metal barrel and viewer extending outward at right angles from the barrel. This is a precision made device, correctly threaded, having an inside thread at one end to take the lens and side thread at the other that fits the camera, and through the prism is reflected on a ground glass the full field.

Focusing and correct parallax is achieved as you look through the prism. With an attachment made by Kodak, known as a focusing finder (and even with the addition of extension tubes made by the same firm) it is possible to focus, on ground glass, all lenses used on a magazine Cine-Kodak.

This is a simple gadget which fits inside the camera in the same position as the film. The exact field is located by looking THROUGH the lens, thus correct parallax is obtained. Bell and Howell also make a similar attachment known as the direct focuser for the Filmo magazine loading 16mm. cameras.

When we increase the focal length of a lens by the addition of a barrel or tube, we alter its light transmission value. In the case of the Goerz reflex focuser it is necessary to open the diaphragm about one stop, but if you wish to know which exact f stop to use with any given extension tube, the following procedure is followed.

Divide the combined length of the lens and the extension tube by the stop indicated by the electric exposure meter. Then divide the focal length of the lens only by that diameter, e.g., we will use a 4-inch lens with an extension tube of 1.38 inches and the exposure meter indicated stop of f8.

4 + 1.38 = 5.38 inches, divided by 8 is .6725; and 4 divided by .6725 = 5.94. Therefore, f8 as indicated on the meter would become approximately f6, if an extension tube of 1.38 inches were used.

When extension tubes are used on telephoto lenses, it is advisable to focus on the most important part of the subject, as it will be found that the depth of field is extremely limited.

LENS LANGUAGE

1. Depth of Focus. The possible film position tolerance (not to be confused with depth of field).

2. Depth of Field. The distance from the closest object in focus to the most distant object in focus.

3. Chromatic Aberration. Different colors focus at different places. Different types of glass refract different colors to different extent. Shorter wave lengths (such as blue) are bent more, and are therefore, brought to a focus closer to the lens than longer wave lengths (such as red), which are bent less and focus farther from the lens.

4. Spherical Aberration. Rays from margin of lens do not focus at the same place as those passing through the center.

5. Distortion. Straight lines focus at curves, especially at edges of screen.

6. Flare. Internal surface reflections from various glasses used in a lens which make their appearance in the form of a circular patch of light on the screen.

7. Astigmatism. The focusing of crossed lines at two different points, for example, two lines of a cross would focus at different points.

8. Curvature of Field. Inability of lens to focus on a plane surface.

9. Unequal Illumination. The concentration of illumination at the center of the image.

10. Coma. Spherical aberration of oblique rays. If the rays enter the lens obliquely, those which strike the nearer part may be deviated more than others and those which strike the distant part may be deviated less.

CARE OF LENSES

Lenses should be kept scrupulously clean and dry. The glass surface of a lens should not be touched with fingers because they leave prints that might scatter the highlights from a scene into nearby shadows. In cleaning a lens, dust

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should first be brushed off, then the glass cleaned with a piece of very soft chamois or linen from which the filler has been thoroughly washed out, then wiped in a circular motion from the center of the lens to the outside

Lenses should not be unnecessarily exposed to excessive heat from the sun Marine atmosphere (ozone) or any other moisture should be immediately removed if it settles on a lens

The writer has many lenses, some of which are rarely used, but would not part with any of them because they possess a charm and individuality, and have won my admiration by their consistency and splendid performance under many trying conditions.

Photofloods Mean Much

(Continued from Page 475)

will easily accommodate the equipment The main part of the case can be divided with a partition so that the reflectors nest in two piles and the plugging box fits on one side while the clamps and wires fill the other. The extensions will fit in around the reflectors A tray which rests on top should accommodate the bulbs, fuses, extra sockets, tools, etc.

This outfit will take care of all normal jobs in houses, offices, sales rooms, schools, and factory corners Whenever a larger set has to be lighted, the same plan as we used in the examples explained above can be readily followed.

In all interior set-ups, it is essential first to survey the desired set and to select carefully a camera position that allows you to take advantage of all the natural places to install lights close enough to your subjects without being visible to the camera

Always take precautions to see that no direct rays from your lights hit the inside of the lens mount, and, for perfection, strive to have your main source of light directly overhead

Radiant Company Issuing New Type of Tripod Screen

The Radiant Manufacturing Corporation announces it has developed a type of tripod screen which it claims is different from anything on the market One of its models is the one-piece Invincible Model D. It is made in sizes from 30 by 40 inches to 52 by 72 inches By a slight pressure of the spring friction clutch the screen may be adjusted so that the lower edge will measure anywhere from 17 to 50 inches above the floor

Agfa Ansco Offers Latest Developing Requirements

Incorporating a number of improvements and refinements over developing kits previously supplied, two new darkroom outfits designed for developing and printing requirements of amateur photographers have just been announced by Agfa Ansco. Identified as the No. 1A and No 2A Outfits, the developing kits provide all necessary material for developing and printing differing from one another in elaborateness and quantity of equipment

Both outfits are entirely made in the United States and are obtainable through all regular photographic dealers, the No 1A at $2.45 and the No 2A at $4.95

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Eveready Cases Available

Two Eveready-type carrying cases, finished in top-grain leather, have just been announced for Agfa Viking, Ready-set special and similar cameras

Supplied in both PB20 and PD16 sizes, these cases incorporate an improvement over the conventional Eveready-type construction which enhances their convenience and serviceability The cases are provided with a locking tripod socket screw which securely fastens the camera to the case and which permits mounting of the camera and case on top of any tripod

Making Black and White Prints from Kodachrome

(Continued from Page 443)

in such a way that all stray light is eliminated from the camera lens.

Now you can use the fast panchromatic film, which is even more sensitive in the green region than the duplicating negative stock. This insures at the same time that you use a lens which is color corrected.

There only remains some uncertainty about the light source. With the Eastman color temperature meter and similar instruments you can determine the exact degrees of Kelvin of your light and keep it constant. But this is not as essential in this case of making the negatives as it would be in the case of shooting the kodachromes with artificial lights. However, it is desirable to keep your voltage from varying

A somewhat different but interesting modification from the above procedure is to shoot your negatives directly from the projected slides They are projected on a transparent screen; a fine ground-glass is perhaps the most desirable. There is also a material with a ground-glass effect available in sheets of two by three feet which is most suitable for this work.

The projected image is rephotographed with your regular camera from the rear of the screen The sides of the image have to be reversed on the screen which is set up so that the ground side faces the camera A sharp focus is necessary and the screen has to be perpendicular and at right angles to the lenses of the projector as well as the camera

These in turn have to be in line so that an imaginary line drawn from one lens to the other will go through the center of the picture on the screen. This is similar to the background projection process used in the motion picture studios

In concluding this article I like to mention that careful notation of all the factors involved will be of great help in simplifying the making of negatives from kodachromes It eliminates mistakes in the future and speeds up the work on following occasions

Philadelphia Cinema Club

Another summer has come and gone and once again the Philadelphia Cinema Club assembled for its first autumn meeting at the Adelphia Hotel It proved to be one of the largest and best ever.

Mr. Levene, our vice president, very ably conducted the meeting in the absence of President Finger

This September meeting will be long remembered Its "Four Star Feature" program opened the Club season with a "bang"! It was entertaining, instructive, amusing.

The first feature was a True and False contest cleverly arranged by our program director, Frank Hirst. He had prepared a series of thirty-two questions which he used in a battle of wits between the Eights and the Sixteens, selecting four members for each side The Eights won by a close margin amid roars of laughter and applause from the audience.

The balance of the program consisted mainly of pictures totaling some 2000 feet in all of 16mm. size, in both color and black and white

The first was a color film, "Pennsylvania Travelcade," an 800-foot sound-on-film reel, a great deal of which had been made by our own members

HERBERT E MOORE
Director of Publicity

Photography by Infrared

(Continued from Page 464)

Beware of Cleaners

Be careful, however, if the suit has not been to the cleaners recently, for stains which may not be able to be seen, will usually show up with surprising clarity in the picture. It is for this, among other reasons, that the criminologist has found infrared photography to be a very useful means of investigation

Stains can be revealed on dark cloth. It is possible to tell whether two kinds of cloth, apparently identical in weave and color, are dyed with the same dye

Different inks behave differently, and there are many cases on record where falsifications have been detected in documents which have been altered by overwriting with ink of the same color as the original

It is also possible very often to reveal the original writing in documents which have been altered by chemically removing it, or by actually scratching it out, and several of the so-called "old masters" have been proved to be clever forgeries by making infrared pictures. It will be clear that the infrared provides a very useful tool for the F. B. I and examiners of questioned documents

From the humanitarian point of view, one of the most interesting applications of the infrared is in the medical field The practice of infrared therapy has been known for a long time, and it depends on the ability of heat radiation to penetrate into the body.

Aids Diagnosis

The infrared used in photography will also penetrate the skin, and pictures made by its means enable the doctor to see the network of veins just below the skin Changes in the pattern of these veins often occur in certain diseases, so that the photographs can be used as an aid in diagnosis

They have also proved of use in studying the progress of healing in the case of some skin diseases, and in examining the interior of the eye, when a turbidity prevents visual examination.

The astronomer depends very largely on photography to aid him in his study of the Universe, and the use of plates sensitive to the invisible rays has helped him to find out much about the atmospheres of the planets, and to discover many stars which are so cold that they do not glow brightly enough to be seen.

As a result of this work it appears that the chances are against there being life on any of the planets except Mother Earth. In the same way that the infrared permits the penetration of the atmospheric haze on earth, it has enabled the astronomer to penetrate the haze of nebulae in the heavens, and to discover stars lying hidden behind it

Pictures in Dark

Since the infrared is invisible, it can be used for taking photographs in the dark Not only will objects, such as a hot flatiron, which emit heat but which are not hot enough to look red, photograph themselves by their own heat, but you can also take lamps, cover them with filters which pass the infrared but no visible light, and make pictures in total darkness of normal objects and people

Some very amusing possibilities present themselves to the imagination, but the method has actually been used to photograph intruders without their being aware that a picture had been made.

This is best accomplished by setting up a flashbulb in a housing closed with a filter which allows only the infrared to pass, and arranging things so that the camera shutter and the flash are operated unconsciously by the intruder

Properly used, infrared photography is a method of great variety of application, useful and amusing, and it can be done with the simplicity of ordinary photography, once the nature of the infrared is understood, and provided no magical powers are ascribed to it.

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